NOV 28 1913

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St. Louis Special Number

# Rock Products

DEVOTED TO

Concrete and Manufactured Building Materials

Volume XIII. CHICAGO, ILL., NOVEMBER 22, 1913. Number 5.


**CAROLINA PORTLAND CEMENT COMPANY**

We are the largest distributers of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Acme" and "Electroid" Brands Ready Roofing. Get our prices.

Charleston, S. C. Birmingham, Ala. Atlanta, Ga. New Orleans, La

**DEXTER Portland Cement THE NEW STANDARD**

Sole Agents SAMUEL H. FRENCH & CO. PHILADELPHIA

**UNION MINING COMPANY**

Manufacturers of the Celebrated

MOUNT SAVAGE FIRE BRICK GOVERNMENT STANDARD

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

**Lime Kiln and Cement Kiln Construction**

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

**UNION MINING CO.**
Mount Savage, Md.

CAPACITY, 60,000 PER DAY
ESTABLISHED 1841

**THE HOTEL UTAH**
**SALT LAKE CITY**

Salt Lake City's new two million dollar hotel

"American Keene Cement" used.

Durability Strength Superiority
USE

"STRONGEST KEENE CEMENT KNOWN"

**AMERICAN KEENE CEMENT CO.,** SIGURD, UTAH

RELIANCE

**CHICAGO BELTING COMPANY**
PURE OAK TANNED LEATHER BELTING

RELIANCE and SEA LION WATERPROOF

The two brands of leather belting that represent the best in belt construction. Our catalog is yours for the asking.

CHICAGO BELTING CO., 113-125 N. Green Street, CHICAGO

Branches: New York, New Orleans, Portland, Ore., Los Angeles, Cal., Cleveland, Ohio. Tannery, Niles, Mich.

SEA LION WATERPROOF LEATHER BELTING


## SPECIAL FEATURES IN THIS NUMBER


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Waterproofing . . . . . " 58



PHOENIX PORTLAND CEMENT

**Phoenix Portland Cement** UNEXCELLED FOR ALL USES.
Manufactured by
**PHOENIX PORTLAND CEMENT CO.**
NAZARETH, PA.
Sole Selling Agent, WILLIAM G. HARTRANFT CEMENT CO.
Real Estate Trust Building, PHILADELPHIA, PENNSYLVANIA.

**Ottawa Silica Co.'s Washed White Flint Sand**

Is used for sawing stone in more than a dozen states. Cuts more and lasts longer than any other sand on the market. Unexcelled for Roofing, Facing Cement Blocks, White Plaster, etc. Freight rates and prices on application.

**OTTAWA SILICA CO.** Ottawa, Ill.

## Best Bros. Keene's Cement

"The Plaster That Stands Hard Knocks"

A cement noted for its quality and durability for over twenty-five years. Ideal for all high-grade interior finishing and decorative work. The one plaster that can be guaranteed for finish work on concrete.

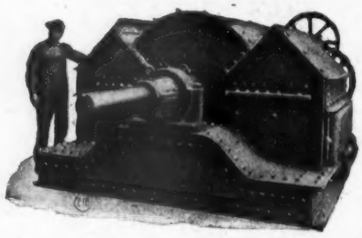
*Write for "The Inner Wall"*

The Best Bros. Keene's Cement Co.

Estab. 1889 Dept. A, Medicine Lodge, Kan.

NEW YORK (40) CHICAGO

## "PENNSYLVANIA" HAMMER CRUSHERS



**For Pulverizing Limestone, Lime, Cement Rock, Marl, Shale, Etc.**

Main Frame of steel, "Ball and Socket" Self aligning Bearings; forged Steel Shaft; Steel Wear Liners; Cage adjustable by hand wheel while Crusher is running.

No other hammer Crusher has such a big Safety Factor.

PENNSYLVANIA CRUSHER CO.

Philadelphia

New York Pittsburgh

CANADA CEMENT COMPANY LIMITED — PORTLAND CANADA CEMENT — MONTREAL

MILLS

| | |
|---|---|
| Montreal | Port Colborne |
| Hull | Shallow Lake |
| Belleville | Marlbank |
| Lakefield | Winnipeg |
| Calgary | Exshaw |

For Prices Any Where in CANADA

Write or Wire Our Nearest Sales Office

## Canada Cement Company LIMITED

Montreal - Toronto

Winnipeg - Calgary

## Quality LEHIGH PORTLAND CEMENT — ALLENTOWN, PA. Service

## 2000% INCREASE IN 14 YEARS

Capacity 1898, 600,000 Barrels

Capacity 1912, 12,000,000 Barrels

The keynote of this unprecedented growth is the

*QUALITY*

*of*

*Lehigh Portland Cement*

Put Lehigh to any test and convince yourself of its supreme quality.

## LEHIGH PORTLAND CEMENT CO.

Main Office ALLENTOWN, PA.

Western Office CHICAGO, ILL.

## MEACHAM & WRIGHT COMPANY CEMENT

CHICAGO

SAYLOR'S Portland Cement — COPLAY CEMENT MANUFACTURING CO. — COPLAY, PA.

## Saylor's Portland Cement

Oldest American Portland

Used by the United States Government since 1876

COPLAY CEMENT MANUFACTURING CO.

SALES OFFICES:

Fifth Avenue Building, NEW YORK CITY

1106 Land Title Bldg., PHILADELPHIA

## Northwestern Portland Cement

NORTHWESTERN STATES PORTLAND — PORTLAND — NORTHWESTERN — CEMENT — MASON CITY, IA. — CEMENT CO.

The Reliable Portland Cement

A Portland Cement for the

## NORTHWEST

NORTHWESTERN STATES PORTLAND CEMENT COMPANY

MASON CITY, IOWA

WOLVERINE PORTLAND CEMENT CO. — WOLVERINE — PORTLAND CEMENT — GENERAL OFFICES, COLDWATER, MICH. U.S.A.

## "WOLVERINE"

The Alright Cement

MADE RIGHT SOLD RIGHT

WORKS RIGHT

WEARS RIGHT

The Best is None Too Good For You. Insist Upon

## "WOLVERINE"

Write for Booklet and Quotations.

Factories at Coldwater and Quincy, Mich. Capacity 3500 Daily.

## WOLVERINE PORTLAND CEMENT COMPANY

W. E. COBEAN, Sales Agent, Coldwater, Michigan

Main Office, Coldwater, Mich.

N

# Sales Results

If you have a product to sell in the cement and building material field, including road and plant equipment, machinery and mill supplies, this opportunity is for YOU

## THE DAILY ROCK PRODUCTS

will be published each day (nine issues) at the **Chicago Cement Show.** Among the estimated, (over 100,000) visitors at the show will be included dealers in building materials, contractors, engineers, architects, road commissioners, and many others. The show is held just before the opening of the big construction season. *These men come to buy equipment and materials.* Inventories have been taken—more supplies and new machinery are necessary.

Are you going to put your name before everybody in the industry at this important moment?

Put your name where it cannot be overlooked and *your sales will be directly benefited.* **The Daily Rock Products** will be published at the right moment. It will be the most efficient salesman you can obtain during the year. **Don't Overlook the Opportunity!**

## THE CHICAGO CEMENT SHOW

is the only cement show of National scope to be held this year. Therefore all the live men of the industry will be concentrated at this time in Chicago. The building material dealers, the architects, the road commissioners, the contractors and the consumers will all be well represented. This will be the only time during the year that some of these men can be reached by trade literature.

In conjunction with the big show, the following associations will hold their regular meetings in Chicago at this time: The National Builders Supply Association; The National Lime Manufacturers Association; The Illinois Association of Municipal Contractors; The Sand and Gravel Producers Association; The American Concrete Institute; The National Conference on Concrete Road Building; Interstate Cement Tile Manufacturers Association; Illinois Lumber and Builders Supply Association.

## CIRCULATION OF THE NINE DAILY ROCK PRODUCTS

The Dailies will be thoroughly distributed at the Show proper, by a dozen men of the **Rock Products** staff. Everybody who enters the door of the Coliseum will be handed a copy. At the numerous Association meetings held in Chicago at this time, copies of each Daily will be given to everyone. A specially selected list, comprising of thousands of names and including the entire subscription list of the monthly **Rock Products** will be mailed copies each day, so that the entire country will be blanketed with the news of the Chicago Cement Show and the advertisers in the papers. The total of each issue will run approximately 10,000 and in the event of any issue being short of the demand, the printer will be ready to print additional thousands at a moment's notice, as has been done at several previous shows.

## THE DAILIES WILL CONTAIN

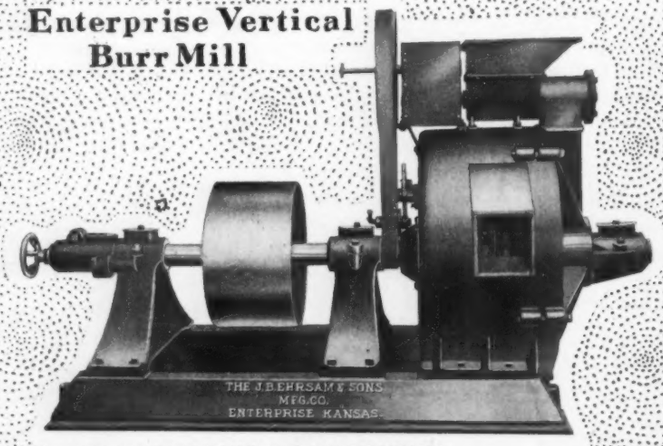
the live news of the Cement Show, the news of the Association meetings held at that time, and other articles of special interest. They will be both entertaining and instructive, and will be published in an improved style, which will attract many an additional reader.

Thus an advertisement in the **Dailies** will strike home to the man to whom you want to sell your product. It will have the combined force of a personal circular and a trade journal advertisement. Your name cannot be overlooked in a sixteen page Daily Paper. This means the advantage of absolutely knowing that your advertisement will be read, and has the additional force from the stamp of approval of **Rock Products.** This is going to be a real salesman for you. Reserve space in the **Daily NOW.** Write us today for further information and we will work with you for larger **Sales.**

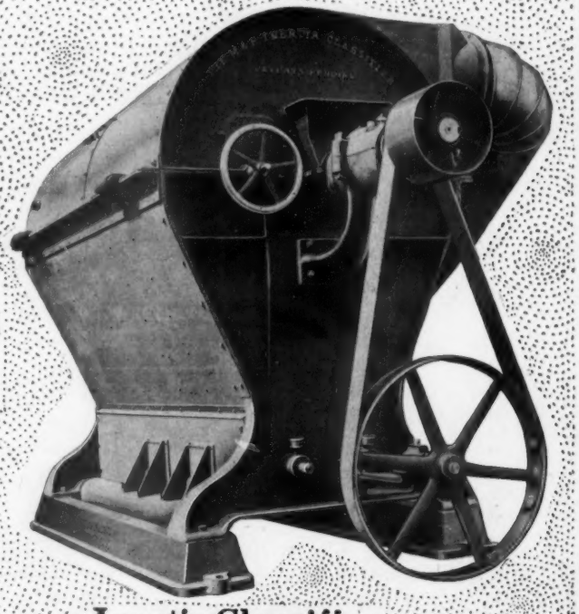
**DAILY ROCK PRODUCTS, Ellsworth Bldg., Chicago, Ill.**

# Equip your grinding plant with EHRSAM grinding & separating machinery

Enterprise Vertical Burr Mill




**THE MORSHER-EHRSAM SYSTEM of GRINDING & SEPARATING will enable you to produce a finer product without corresponding increase in power.**



Inertia Classifier

**SEND US A SAMPLE of your material stating fineness and capacity required and we will furnish full particulars.**

Horizontal Burr Mill

**THE INERTIA CLASSIFIER is of inestimable value in plants where a fine material is required owing to its low cost per ton capacity and owing to the small amount of power required per ton capacity.**

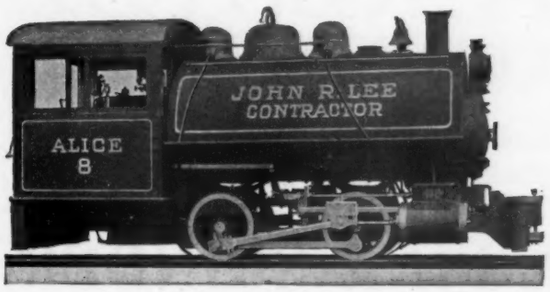
**It can be operated in connection with Burr Mills Hammer Mills or any other type of grinding Mill.**

# J. B. EHRSAM & SONS MFG. CO.

Manufactures of GYPSUM PLASTER MILL MACHINERY.

ENTERPRISE, KANSAS.

# INDUSTRIAL LOCOMOTIVES




Industrial locomotives must be durable and strong. They must be carefully designed and constructed with the greatest care.

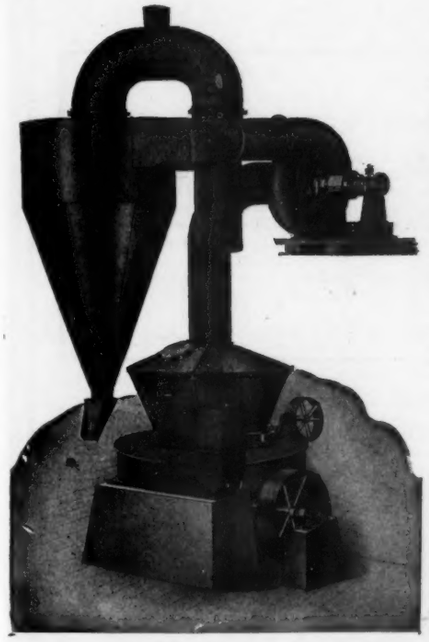
Our locomotives are designed and built to insure reliability and constant service. All wearing parts are made to templates and gauges, and are interchangeable for all locomotives of the same size and design. Repair parts sure to fit, are kept in stock to avoid long delays when replacements are necessary. Write us when in the market for a new locomotive.

## AMERICAN LOCOMOTIVE COMPANY

**30 CHURCH STREET, NEW YORK**

McCormick Building, Chicago, Ill.
Dominion Express Bldg., Montreal, Canada
Carl G. Borchert, Pioneer Building, St. Paul, Minn.
A. Baldwin & Co., New Orleans, La.
N. B. Livermore & Company, San Francisco and Los Angeles, California
Northwestern Equipment Company, Seattle, Wash., and Portland, Oregon

# Limestone 92%—200 Mesh, Can Be Ground At the Rate of 6½ Tons Per Hour



Is Only One of the Remarkable Records of the Raymond Mills in Cement Plants. Here are others:

**Saves** 12% in coal grinding due to the extreme fineness.
**Saves** ½ the power expense.
**Saves** 66⅔% in labor expense.
**Grinds** coal at 12½c a ton, exclusive of power.
**Grinds** 6 times as much coal as other mills it has replaced.
**Grinds** raw material and coal at 3-10c per barrel for maintenance.

## RAYMOND PULVERIZING AIR-SEPARATING SYSTEM

A 3 unit Raymond Mill grinds enough coal in 12 hours to burn 3000 barrels of clinker per day.

By separating the ground material by air suction eliminates all bolters, reels and screens which are very costly to install and replace and which cause frequent shut downs. No product escapes to be wasted or to choke the workmen.

The air method of separation also does away with the necessity of all other elevating, conveying and handling machinery.

Write for our "Book on Pulverizing"—It embodies the most advanced ideas in Grinding Engineering—being the result of 25 years study; involving an expenditure of hundreds of thousands of dollars in experiments, inventions and improvements in pulverizing processes in all industries.

**We design special machinery and methods for Pulverizing, Grinding, Separating and Conveying all powdered products. We manufacture Automatic Pulverizers, Roller Mills, Vacuum Air Separators, Crushers, Special Exhaust Fans and Dust Collectors.**

SEND FOR → THE BOOK

**Raymond Bros. Impact Pulverizer Co.,**
**1301 N. Branch St., Chicago.**

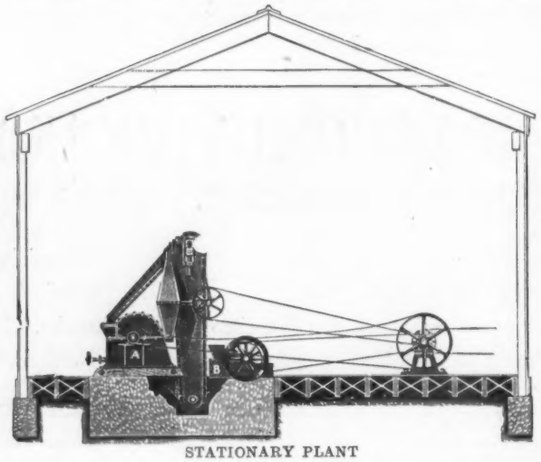
Please send us your Book on Modern Methods of Pulverization.

Name .....
Street .....
City ..... State .....

# ARE YOU INTERESTED
## IN MAKING MONEY?

**Yes? Then read and ACT. Your Limestone Screenings now are practically waste—but, YOU can convert this waste into Money—by grinding these screenings fine enough to be used as LIMESTONE FERTILIZER with the**

## WILLIAMS UNIVERSAL FINE GRINDER



STATIONARY PLANT

This machine will take your screenings and grind same in one operation to a fine, uniform size, admirably suited for use as Limestone Fertilizer. The Limestone Fertilizer industry is growing by leaps and bounds, why then, do you neglect to get your share of this business? Here is what one producer has to say regarding this industry—

**THE SOUTHERN ILLINOIS PENITENTIARY**
**WARDEN'S OFFICE, J. B. SMITH, Warden**

The Williams Patent Crusher & Pulverizer Co.
2701 North Broadway, St. Louis, Mo.

MENARD P. O., ILL., September 24, 1910.

Gentlemen:—We have, as you know, two of your dust mills installed at the **Southern Illinois Penitentiary**. The first mill purchased had a capacity of 10 tons per hour. We found the increasing demand for limestone dust would require us to place another mill in operation so our Board took the matter up and contracted with you for delivery December 1909 of your larger mill, which has a capacity of 20 tons per hour. In 1909 our shipments of limestone dust were 150 cars. Our shipments for 1910 will reach at least 400 cars of 30 to 40 tons each. We did not get the new mill installed ready for operation until the 10th of August as we had to remove the small mill from the Crusher No. 1 in the yard and place it at Crusher No. 2, installing the new mill at Crusher No. 1. Crusher No. 2 is about one-fourth of a mile from the prison. Had we had our quarry in shape to get out the stone we are satisfied that the demand this year would have been for not less than 18,000 tons, but at the lowest estimate we can figure on what we will put out this year will be 20,000 tons.

The mills placed in the hands of any experienced man with machinery **will do all that you recommend they will do.** We are satisfied a great deal better results would be obtained by the mills being handled with free labor, than they can by convict labor.

Yours truly,
JAS. B. SMITH, Warden.

You have the screenings—we furnish the machine; the two combined will turn dollars into your pocket. Therefore ACT install a Williams Universal Grinder and grind your screenings into Fertilizer—the demand for this material is steadily increasing.

**Bulletin 4 gives further details—Write for it.**

# The Williams Patent Crusher & Pulverizer Co.

**General Sales Department, Old Colony Building**

**Works: ST. LOUIS, MISSOURI** **CHICAGO, ILLINOIS** **SAN FRANCISCO OFFICE, 268 Market St.**

# AUSTIN GYRATORY CRUSHERS

Made in Eight Sizes

50 to 5000 Tons Per Day

Plans and Specifications submitted and expert advice free on any problems involving rock-crushing or earth-handling.

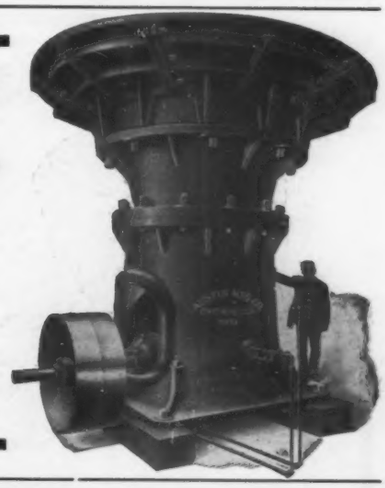
## AUSTIN MANUFACTURING CO.

CHICAGO

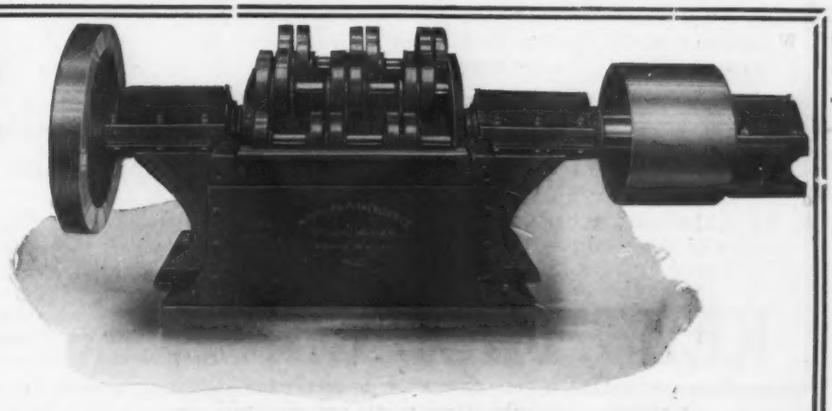
New York Office: 50 CHURCH STREET

Canadian Agents: MUSSENS, Ltd., Montreal

We manufacture:—Road and Elevating Graders, Scarifiers, Road Rollers, Quarry Cars, Dump Wagons, Stone Spreaders, Street Cleaning Machinery.



# SATISFIED



*BECAUSE*, more tons of

**Pulverized Limestone**

has been produced and can be produced with a larger

**Percentage of Fines**

with

**LESS POWER and UP KEEP COST**

than with any other machine we have used or have seen in use.

"We bought No. 15 American Ring Pulverizer March 1910 and were pleased. We bought No. 24 American Ring Pulverizer January 1912, have operated it twenty-four hours daily.
Our orders exceeded our output, a condition that called for additional machinery.
*EXPERIENCE and INVESTIGATIONS* caused us to install No. 48 American Ring Pulverizer.
The American Ring Pulverizer has been found to be superior after three years' trial."
Thus writes, The G. C. Buquo Lime Company.

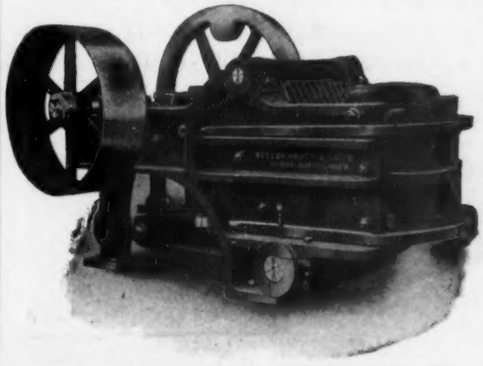
**This machine will crush and pulverize gravel, quartz, sandstone, or any kind of rock.**

## A GUARANTEED MACHINE

(Made in six sizes)

WRITE FOR PARTICULARS

# American Pulverizer Company, E. St. Louis, Ill.



Nippers—17 x 19", 18 x 26", 20 x 30", 24 x 36" and 26 x 42".

# Jaw and Rotary CRUSHERS

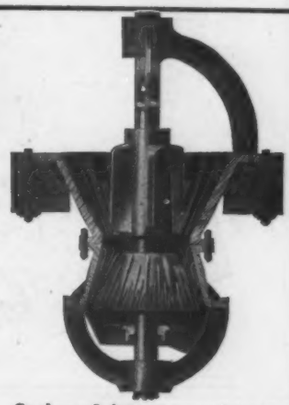
For all Rocks and Ores Softer than Granite

GYPSUM MACHINERY — We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting, etc.

Special Crusher-Grinders for Lime

## Butterworth & Lowe

17 Huron Street, Grand Rapids, Mich.



Crackers—6 sizes—many variations.

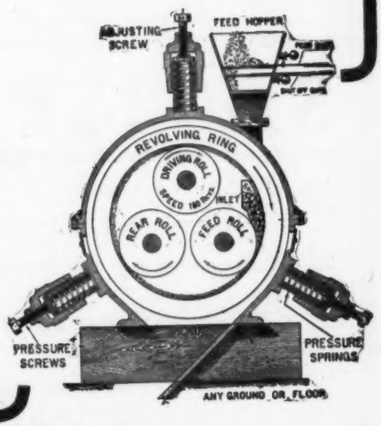
# MAXECON

## Means MAXimum of ECONomy

Years of experience with the assistance of our hundreds of customers has found THE SOLUTION OF GRINDING HARD MATERIALS. The MAXECON PULVERIZER combines highest EFFICIENCY, greatest DURABILITY and assured RELIABILITY, Uses the LEAST HORSE POWER per capacity. Embodies the features of our Kent Mill with improvements that make it MAXECON.

**WE DO NOT CLAIM ALL of the CREDIT for this achievement**

We have enjoyed the valuable suggestions of the engineers of the Universal Portland Cement Co. (U. S. Steel Corp.), Sandusky P. C. Co., Chicago Portland C. Co., Marquette Cement Mfg. Co., Western P. C. Co., Cowham Engineering Co., Ironton P. C. Co., Alpena P. C. Co., Castalia P. C. Co., Pennsylvania P. C. Co., and many other patrons.



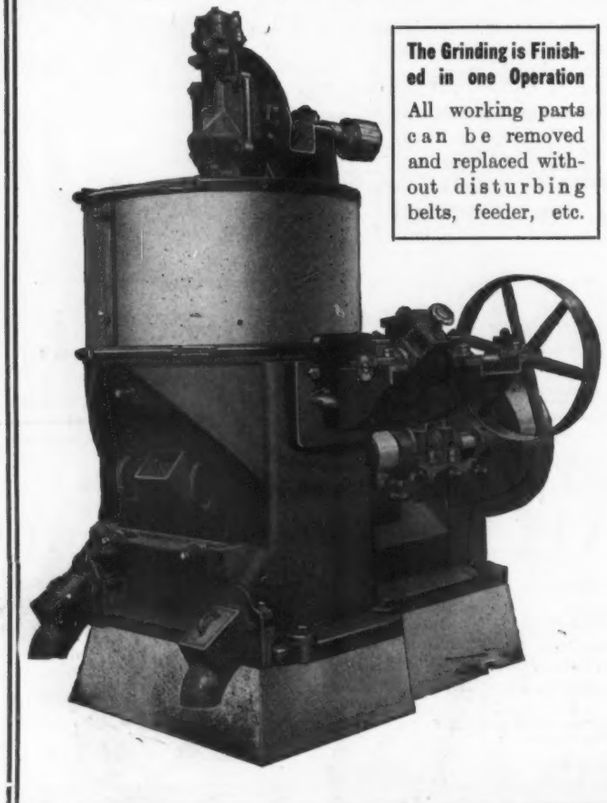

## THE RING WOBBLES

The FREE WOBBLING POUNDING RING instantly and automatically ADAPTS its position to the variations of work.

Its GRINDING ACTION is DIFFERENT than any other; besides the STRAIGHT rolling action of the rolls, the SIDE to SIDE motion of the ring makes the material subject to TWO crushing forces and DOUBLE OUTPUT results.

## KENT MILL CO.

10 RAPELYEA ST., BOROUGH OF BROOKLYN, N. Y. CITY
LONDON, W. C., 31 HIGH HOLBORN
CHARLOTTENBURG 5, WINDSCHEID STRASSE 31, BERLIN



**The Grinding is Finished in one Operation**

All working parts can be removed and replaced without disturbing belts, feeder, etc.

# BONNOT PULVERIZER

**Grinds and Screens Limestone, Raw Lime and Hydrated Lime**

**Does it at One Operation. Gives You Any Desired Fineness**

GRINDING LIME IS LARGELY A SCREENING PROPOSITION. THE BONNOT PULVERIZER HAS THE LARGEST SCREENING SURFACE AND CONSEQUENTLY THE GREATEST CAPACITY.

NO OTHER MACHINE LIKE IT IN THE ACCESSIBILITY OF SCREEN AND GRINDING PARTS.

**No. 4 Catalog Explains These Advantages**

## THE BONNOT COMPANY

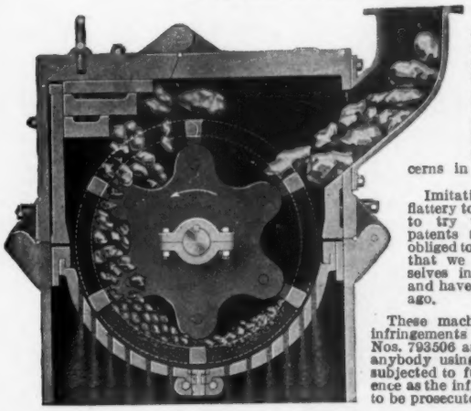
909 N. Y. Life Bldg.
KANSAS CITY, MO.

CANTON, OHIO

# THE GARDNER CRUSHER

For Grinding and Pulverizing Limestone, Feldspar, Oil Cakes, Bone Tankage, Marl, Phosphate Rock, Bricks, Granite, Coal, Etc.

## WARNING



We warn our prospective customers against imitations of our machine which have lately been put on the market by two of the largest concerns in America.

Imitation is a great flattery to us but in order to try to infringe our patents they have been obliged to resort to devices that we have tried ourselves in the beginning and have abandoned long ago.

These machines are direct infringements of our patents Nos. 793506 and 1013527 and anybody using them may be subjected to future inconvenience as the infringers are going to be prosecuted.

**GARDNER CRUSHER COMPANY** Office: 1482 Broadway

Demonstrating Plant: 556 West 34th Street, New York

AGENTS

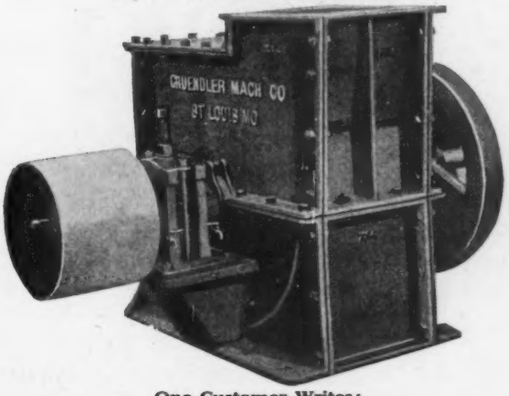
MARSH COMPANY, Old Colony Bldg., Chicago, Ill. C. O. BARTLETT & SNOW CO., Cleveland, Ohio

W. E. AUSTIN MACHINERY COMPANY, 2 Spring Street, Atlanta, Ga.

# GRUENDLER PULVERIZERS

Grind perfectly Limestone, Phosphate Rock, Coal, Brickbats, Coke, Kaolin, Shale, Marl, Fireclay, Bones, Tankage, Fertilizer Materials and Ores of all kinds.

Any Desired Fineness in ONE Operation




**One Customer Writes:**

"The Crusher works to our entire satisfaction and we believe we have selected the best make for our purpose."

**Another One Says:**

"The two Crushers you have furnished us have given entire satisfaction. We are now considering putting in another machine of larger capacity; kindly state lowest prices and sizes."

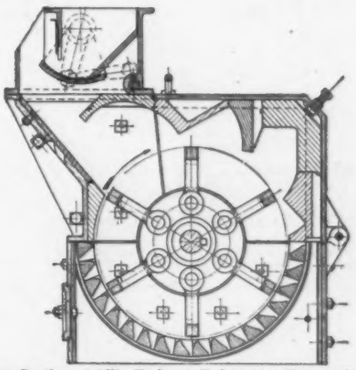
We manufacture these machines in sizes from 3 to 400 tons daily capacity. The entire interior is constructed of steel and they are built for great strength and durability throughout. They are easily handled, all adjustments being made from the outside.

*Write for Catalog and Prices*

**GRUENDLER PATENT CRUSHER & PULVERIZER COMPANY**

924-928 N. FIRST STREET SAINT LOUIS, MO

# Pulverators



Cross Section of Allis-Chalmers Pulverator (Patented)

# Pulverizing

## by a New Principle

**Note that Involute Curve The Direction of Rotation**

Advise us your requirements concerning capacity and fineness wanted

*Forward Sample of Your Material*

**Complete Rock Crushing Plants and Cement Mills—Power Plants—Electric Motors**

# Allis-Chalmers

## Manufacturing Company

OFFICES IN ALL PRINCIPLE CITIES

MILWAUKEE, WISCONSIN.

For All Canadian Business Refer to Canadian Allis-Chalmers, Ltd., Toronto, Ont.

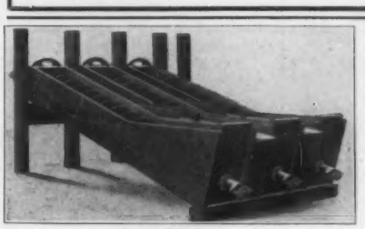
FOREIGN REPRESENTATIVES:—Frank R. Perrot, 883 Hay St., Perth, W. A. Frank R. Perrot, 204 Clarence St., Sidney, N. S. W. Mark R. Lamb, 87 Galeria Beeche, Casilla, 2653, Santiago, Chile. H. I. Keen, 732 Salisbury House, London Wall, E. C. London, England.

# TISCO MANGANESE STEEL CASTINGS

*FOR SEVERE SERVICE*

**TAYLOR-WHARTON IRON & STEEL CO.**

HIGH BRIDGE, . . . . NEW JERSEY



Sand Washers

**LEWISTOWN FOUNDRY & MACHINE CO.** Lewistown, Pa.

Builders of heavy duty crushers and glass sand machinery.

Glass sand plants equipped complete

Write for prices and catalog

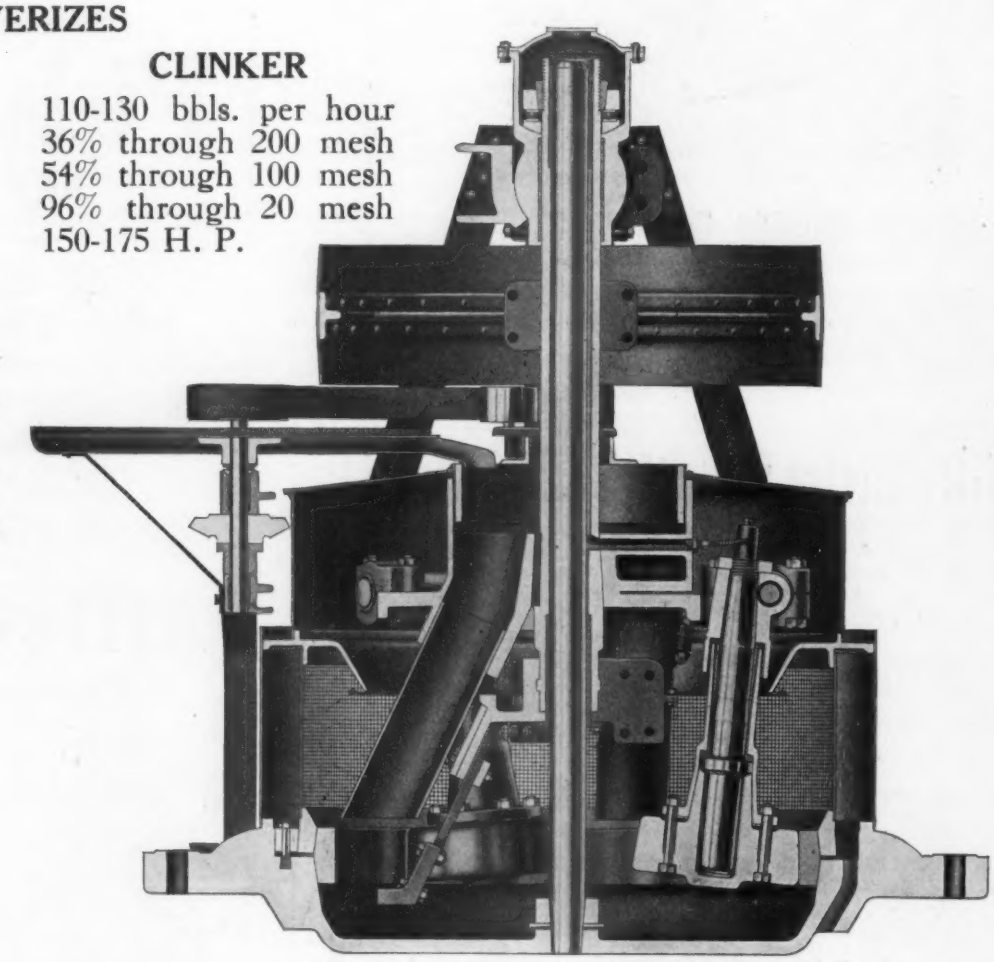
# The Bradley 66-Inch Three Roll Mill

## Is Now Ready for Delivery

Has been thoroughly tested breaking down both Limestone and Cement Clinker for Tube Mill Feed—**It's the largest and most economical preliminary Pulverizer in use**—built on principles which have been acknowledged by engineers and operators to be the most economical method of pulverizing.

**PULVERIZES**

| LIMESTONE | CLINKER |
|---|---|
| 35-50 tons per hour | 110-130 bbls. per hour |
| 50% through 100 mesh | 36% through 200 mesh |
| 96% through 20 mesh | 54% through 100 mesh |
| 200-H. P. | 96% through 20 mesh |
| | 150-175 H. P. |



**Extreme Height, 11 Ft., 1½ In.**
**Die Ring, 66-inch Diameter**
**Driving Pulley 72-inch Diam.**
**Weight, 45000 Pounds**

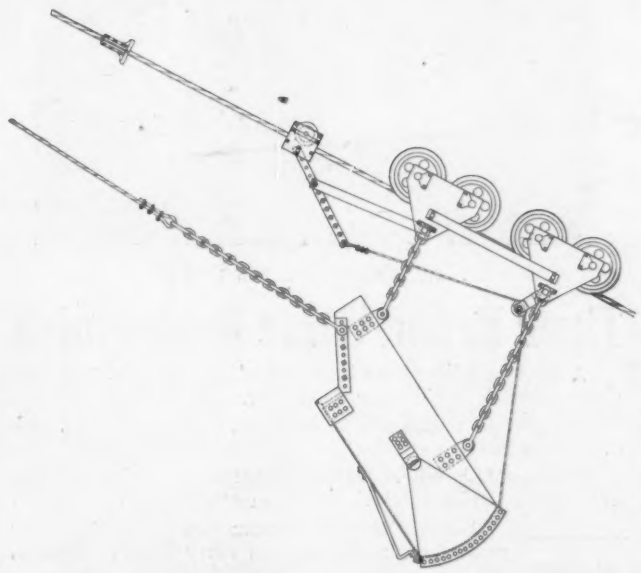
**Cost of Maintenance Unbelievably Low**

**Takes for Feed Material Direct from Kiln or No. 5 Crusher**

Two installations in successful operation on Clinker and Limestone—full information and names of users, upon request—it will surely pay to investigate the merits of this new pulverizer—investigation will surprise the most skeptical.

**BRADLEY PULVERIZER CO.,** BOSTON
London. Berlin

# The Latest Advances in Drag Line Excavators



We have developed several styles of improved excavators of the gravity return type, making very important advances over others

**1st.** The buckets are arranged to discharge at any point along the main cable.

**2nd.** Extra large four wheel trolley, brass bushed and provided with grease cups.

**3rd.** Automatic rear dumping bucket.

The saving of power and time by our rear dumping bucket is very important. To turn a bucket over requires considerable additional power, being one of the hardest duties of the excavator engine to perform, as the load is heavy and the lift directly vertical. The automatic operation of the gate, both in opening and closing is a very simple one, and adds greatly to the value.

Our buckets are made of extra heavy plates, thoroughly riveted and stiffened by heavy reinforcing bars. The trolley wheels are bronze bushed; the pins are interchangeable and are easily accessible for repairs. The best improved plough steel cables are used. Our cable fittings are manufactured with particular care.

*Write to us today for complete information and let us show you some of the wonderful results we have accomplished.*

**THE RAYMOND W. DULL CO.**

**718 CHAMBER OF COMMERCE BLDG.**
**CHICAGO, ILLINOIS**

# American Steel & Wire Company

## Triangle Mesh Concrete Reinforcement

WARREN & WETMORE, Architects

OVER 2,000,000 square feet of Triangle Mesh Concrete Reinforcement used.

Triangle Mesh Concrete Reinforcement is made from Cold Drawn Steel Wire. Tensile strength 85,000 pounds per square inch. Furnished in rolls of 150, 200 and 300 feet.

**Chicago** **New York** **Cleveland**
**Pittsburgh** **Worcester** **Denver**

Export Representative, U. S. STEEL PRODUCTS CO., New York
Pacific Coast Representative, U. S. STEEL PRODUCTS CO., San Francisco
Los Angeles Portland Seattle

Tell 'em you saw it in ROCK PRODUCTS

# MITCHELL LIME

has been made for over fifty years. It has always maintained a standard of high quality and uniformity. It is today recognized as the leading high calcium lime.

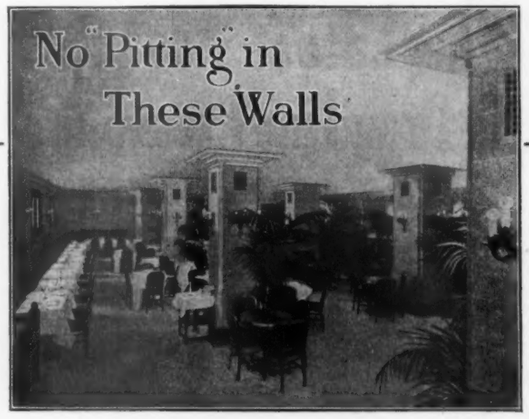
For chemical or building purposes it will give the best of results.

Two plants with ample capacity and two railroads, guarantee prompt shipments and quick deliveries.

**Mitchell Lime Company**

**Works:**
**Mitchell, Ind.**

**1515 Consumers' Building,**
**CHICAGO, ILL.**




THE CAFE, HOTEL RECTOR, NEW YORK CITY

## Tiger Brand White Rock Finish

A hydrated lime for white coat plastering and the best proposition of its kind for the dealer.

It satisfies architects and builders, because it never pits or blisters in the wall.

It is easy to handle, because it does not break the packages or burn, and will not deteriorate no matter how long it is kept.

TIGER BRAND

On Every Sack

Some of the best lime orders in your town are going to the dealers who carry **Tiger Brand.**

**The Kelley Island Lime & Transport Co.**
**Cleveland, Ohio**

MONARCH HYDRATED LIME

The National Lime & Stone Co.
CAREY, OHIO

## Be a Monarch Man

WHERE building laws are stringent and inspectors super-critical Monarch Hydrate has never failed to pass successfully all required tests and saved the builders vast sums of money and an immense amount of time.

Time is an important item—Why waste it? We invite you to join the procession of joyful, satisfied, money-saving users of

**Monarch Hydrated Lime**

WE SHIP SUDDEN

THE AMERICAN FABRIC BELTING COMPANY
WATERPROOF
"NESTOR"
BELTING
CLEVELAND, OHIO.

## BUILT

**ESPECIALLY FOR**

## SAND and GRAVEL PLANTS

# The Ohio and Western Lime Company

WORKS AT
Huntington, Indiana
Marion, O.
Gibsonburg, Ohio
Fostoria, Ohio
Sugar Ridge, Ohio
Tiffin, Ohio
Genoa, O.
Limestone, Ohio
Lime City, Ohio
Portage, Ohio
Luckey, Ohio
Bedford, Ind.

MANUFACTURERS OF AND WHOLESALE DEALERS IN

Ohio and Indiana White Finishing Lime, Ground Lime, Lump Lime, Fertilizer Lime, Hydrate Lime, Cement, Plaster, Hair, Etc., Etc.

MAIN OFFICE: Huntington, Ind. Branch Office: Marion, Ohio.

Capacity
8000 Barrels
Per Day

# BANNER HYDRATE LIME

*That Made Gibsonburg, Ohio, FAMOUS*

MANUFACTURED BY THE

## NATIONAL MORTAR & SUPPLY CO.

PITTSBURG ∴ ∴ PENNSYLVANIA

# CROWN HYDRATE

HIGH CALCIUM HYDRATED LIME

At present prices you can waterproof, improve the color and strengthen the texture of all cement construction and actually **save money** because the Hydrate **replaces** the same amount of cement (15 to 25%).

**Kritzer Vacuum Process**

## MARBLEHEAD LIME COMPANY

KANSAS CITY CHICAGO

"If It Is Lime We Make It"

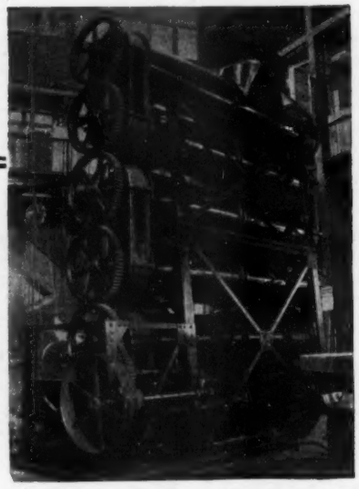
# Dealers, Attention!

We manufacture the **Strongest Lime** in **Ohio.** The reason! Our Lime Stone is of that quality. We can ship straight or mixed cars of bulk, barrels, Mason Hydrate, Lime Flour White Finishing Hydrate, also Clover Grower for improving the soil. Write or wire for prices.

## Scioto Lime and Stone Company

Delaware - - - - - - - - - Ohio

# HYDRATED LIME



KRITZER CONTINUOUS PROCESS

## The Dealers' Opportunity for Increasing His Profit

Many retailers of masons' supplies are either overlooking or failing to appreciate how their sales might be increased by carrying HYDRATE in stock. It will not only increase their revenue directly but put them in touch with a wider range of customers who, in the course of time, might become purchasers of other supplies. This is particularly applicable in suburban cities or rural districts.

If a dealer were to circularize his community, setting forth the many advantages of HYDRATE in the suburban home where they have from a half an acre to ten acres, or for the farmer with a big farm, he would gradually build up a business in this commodity which would be surprising.

The average resident in a suburban district does not know that lime, scientifically hydrated, can be procured in small quantities and kept indefinitely in a comparatively dry place so that it can be used when the occasion presents itself. If this fact were known, practically every one of these suburbanites and farmers would keep a bag or two on hand constantly.

### SOME OF THE USES

A small box of HYDRATE kept in the cellar serves to absorb the damp and purifies the atmosphere, making it much more wholesome especially where foods are kept.

HYDRATE can be used for whitewashing. Quite a number of formulas can be secured and if it is properly mixed, it will not only make the very best whitewash, but it will act as a cold water paint.

One of the advantages of using HYDRATE is that it does not have to be slaked. The process of slaking is accompanied by no little danger, especially to the novice who does not understand the explosive nature of lime when it slakes.

HYDRATE is not air slaked lime and for that reason can be used any place that ordinary slaked lime can be employed. Air-slaked lime cannot be used for plastering, but HYDRATE can. There are always times when a little patching is necessary. Laying up of stone or brick can be easily accomplished, saving both time and money.

HYDRATE, when mixed with concrete fills voids and pores and not only makes the concrete more plastic and easier to use, but by increasing its density, makes it watertight. It also has a tendency to lighten the color and make a more attractive job. Add 10% to 15% to the mix.

HYDRATE is also a well known insecticide and germicide and when used to dust around the chicken houses will not only have a tendency to purify the atmosphere but keep down vermin, especially if mixed with kerosene.

HYDRATE can be used to spray around the lawn or garden or around roots of trees, shrubbery, etc. It can be used with a mixture of kerosene or sulphur as a spray.

There are many more uses for lime around the farm that the average farmer is well acquainted with.

### ONE DEALER'S EXPERIENCE

We have in mind a retailer of masons' supplies who has, by circularizing the residential section on the outskirts, and the farmers immediately adjacent, to his township, created a demand for HYDRATE in small quantities and he says that the advertising which he has secured in this manner has brought him trade for cement, sewer pipe, coal, lumber and other materials. He puts it up in one, five and ten pound packages and sells it at a nice profit. He says that many of the farmers are now keeping a bag or so constantly on hand and they tell him that they would not be without it as it is one of the handiest things to have about the farm.

One dealer mentioned the case of a farmer living about eight miles from his yard who stated that frequently when he had a little whitewashing to do it would mean sending his man with a team to the nearest station for two or three bushels of quicklime. Frequently the dealer would be sold out of the product for a few days and this would necessitate the team making another trip, thus increasing the cost.

All that is necessary to work up a nice business in this commodity is a little advertising on the part of the retailer in order to acquaint the farmers with the advantages of hydrated lime. While it is not a new product it is comparatively so to the average surburban resident and small farmer and it is to these that the retailer must make his appeal. Many a farmer has been started to using HYDRATE in this way and has become a large user in time.

Retailers of masons' supplies will do well to give this subject some thought and if they are not thoroughly familiar with its possibilities, we would be pleased to give them any assistance or information which we have at hand to aid them in building up their trade in HYDRATE.

—*Mason & Builder.*

Our business is to install up-to-date hydrating plants and guarantee results. Our plants are all designed to meet local conditions. The CONTINUOUS PROCESS is the only process that has proved successful in hydrating both high calcium and dolomitic lines. While we do not recommend the batch system, however, we install them for making hydrate for the fertilizer trade, but not for general use. We would like to take this matter up personally with you and feel confident that we could interest you in our process and machinery.

# The Kritzer Company

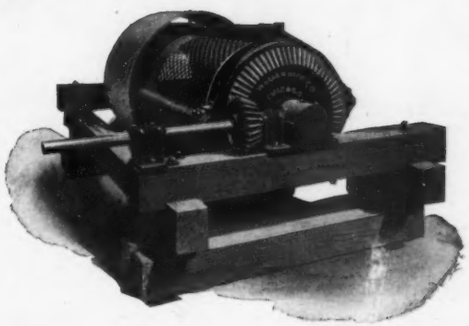
## Chicago, Ill.

# WELLER-MADE

## WELLER MACHINERY

stands for absolute satisfaction in quality, construction and efficiency

ALL your Elevating, Conveying and Power Transmission problems can be solved by employing the Weller Machinery. It is built to SERVE and to SATISFY. ¶ Weller machinery is recognized as the correct method for handling rock and other heavy materials. It saves labor and minimizes your running expense. The Weller Power Transmission machinery is known and approved for its quality and utility.



WRITE for our catalogue No. 20, containing all the Weller products—free on request.

**Weller Mfg. Co.** Chicago

New York Office: 50 CHURCH ST.

# Don't Buy Hydrated Lime

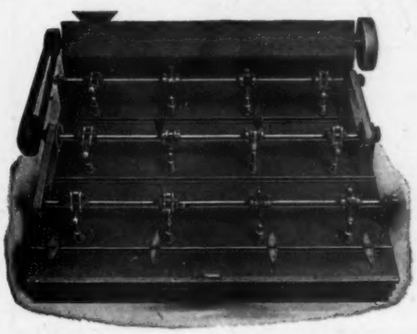
Clyde Hydrator with Hood
"The common sense way"

at random; ***specify "Clyde Process" Hydrated Lime.*** The material that has the qualities ***you*** want, either as a consumer or a dealer. The presence of this ***quality*** has enabled Clyde operators to sell 90% of the Hydrated Lime used in America. Insist on getting "Clyde Process" Hydrated Lime, it will put snap into the appearance of your work, it will ginger up a sick selling organization. If your dealer or producer doesn't carry this material, send us his name, we will tell you where you can get it in your neighborhood. We furnish complete "Clyde Process" Hydrating plants with capacities from 1 ton an hour up. Interesting booklets for the asking.

***"The Man that put QUALITY into Hydrated Lime."***

**H. MISCAMPBELL, Duluth, Minn.**

Patentee and Sole Manufacturer of Clyde Hydrators



## STURTEVANT MACHINERY

**CRUSHERS** **GRINDERS** **SCREENS**

**Thirty Years of Practical Experience** has taught us that no one machine is adapted to all purposes. Customers expect correctly designed machines for their special work. Our large line enables one to select properly. It consists of:

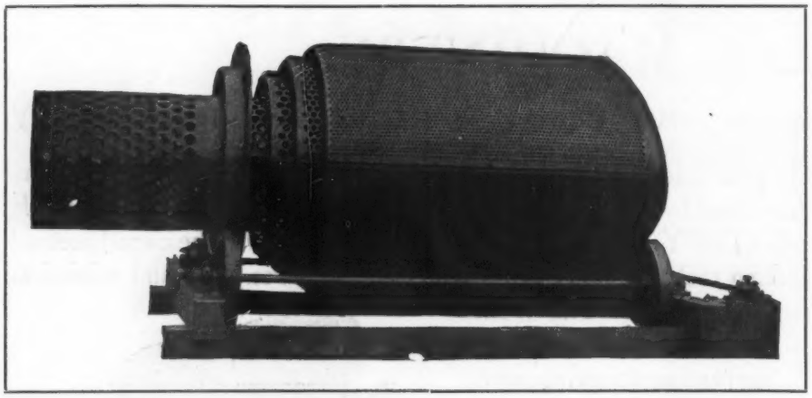
CRUSHERS—For coarse, medium and fine work on hard or soft rock. Jaw, Rotary and Hammer design.
CRUSHING ROLLS—Coarse, medium and fine. Hard or soft rock,—wet or dry.
TRI-ROLL MILLS—For medium crushing, giving Two Roll Reductions.
RING-ROLL MILLS—For pulverizing hard materials.
EMERY MILLS and HAMMER-BAR MILLS—For pulverizing softer materials.
SCREENS—Inclined Vibrating and Rotary for fine or coarse work—wet or dry.

Sampling Crushers, Rolls, Grinders and Screens. Send for Catalogue.

**STURTEVANT MILL CO., BOSTON, MASS.**

NEW YORK CHICAGO CLEVELAND DENVER PITTSBURGH ATLANTA VICTORIA, B. C. LONDON ENG.

# JOHN O'LAUGHLIN'S SCREEN



made solely by **Johnston & Chapman,** is the

## ONLY SCREEN

on the market for wide-awake quarry-men and miners, who want to separate crushed granite, limestone or other minerals, gravel, sand, coal or coke. It will soon earn its cost in saving of repairs, and maintenance, and reduced power, and will do more and cleaner work than any other cylindrical screen of like area. No one can afford to keep old traps in use when the **O'Laughlin** installed

## NOW

will from the moment it starts give a better and larger product, and a big interest on your investment in continuous saving in cost of repairs, renewals, and power. For particulars address:

The advantages of these screens are described in detail in a circular which WE WILL MAIL TO ANY ADDRESS. Mr. John O'Laughlin, the inventor, has designed many notable improvements in rock-drilling, quarrying, crushing and screening machinery, and uses these improved screens in his own crushing plants, which others have declared "to be the most perfect in existence in every detail." The O'Laughlin Screen is an important factor in the most modern and perfect stone-crushing plant.

## JOHNSTON & CHAPMAN CO.

**Corner Francisco and Carroll Ave., Chicago, Ill.**

Perforators of Sheet Metals, Flat, Cylindrical, and Conical Perforated Screen Plates for Quarries, Mines, Reduction Works, Mills and all Industrial Purposes.

# OUR MOTTO—"QUALITY and SERVICE"

**(Prices Always Right)**

WIRE, MAIL OR PHONE ORDERS TO NEAREST MILL

## The National Retarder Co.

SUCCESSORS TO

The Chemical Stucco Retarder Co.
Webster City, Iowa

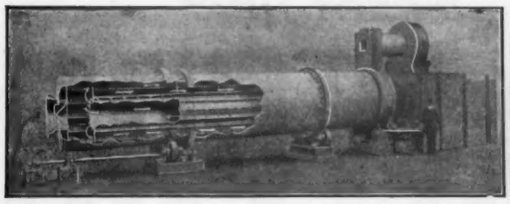
The Ohio Retarder Co.
Port Clinton, Ohio

The Binns Stucco Retarder Co.
Uhrichsville, Ohio

MILLS AT

**Webster City, Iowa** **Port Clinton, Ohio**

**Branch Office, Toledo, Ohio**



*Section showing direction gases pass through the dryer*

## Neither Guesswork Nor Theory

are praticed by us when it comes to solving a problem in drying. We know what we can do for we have been specialists in the drying field for the last 16 years.

# RUGGLES-COLES "DOUBLE SHELL" DRYERS

are used in all parts of the world, there being more than 350 installations. Over half a hundred are used for drying sand and gypsum at plaster, brick and cement plants.

We build six regular types of dryers, but for special work we build machines to order.

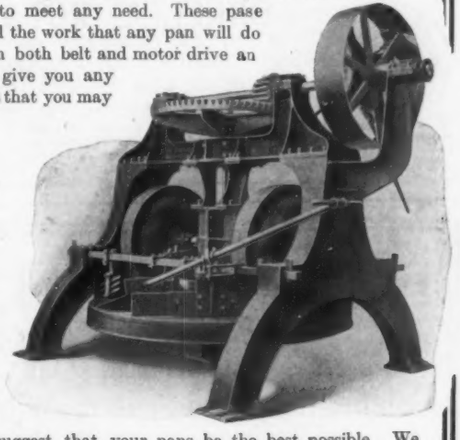
*Book "What We Dry" will interest you.*

**Ruggles-Coles Engineering Co.**

CHICAGO OFFICE
McCormick Building
(37-117)
50 Church Street
NEW YORK

## YOUR PAN NEEDS

THIS pan is the identical pan required for your plant and it should speak to you convincingly of our pan quality. It has put many Sand-Lime Brick Plants on a paying basis and will mak money for you. There is no line of pans made which will compare with the "Built Right, Run Right" line and your needs can be fully taken care of from our peerless line. We build pans with a range in size and capacity to meet any need. These pase are adapted for all the work that any pan will do We have them in both belt and motor drive an will be pleased to give you any points on our pans that you may inquire about.



A poor pan is an expensive proposition. Its inefficiency shows in the quality of your product and the size of your repair bills. It also limits your capacity by handicapping the rest of the equipment. Real economy would suggest that your pans be the best possible. We will be pleased to talk pans or any other equipment with you.

*We Build Complete Equipments for Sand-Lime and Clay Brick Plants*

**The American Clay Machinery Co.**

Willoughby, Ohio, U. S. A.

## Here's a Yankee Who Fights

all forms of dampness in Wood, Plaster, Brick and Cement.

He hails from Boston, and his equipment is PAIL AND BRUSH and plenty of

# Bay State Brick and Cement Coating

It is the ideal protector against moisture, because

It insures uniformity of shade.

It does not destroy the distinctive texture of cement.

It will prevent dampness above grade.

It will prevent hair cracking on exteriors.

It will safeguard metal lathing, steel and iron girders from disintegration.

It is a fire retarder, consequently for mill construction, on interior woodwork, should reduce insurance.

It will not chip, flake or dust off walls and ceilings, thus affording a maximum protection to fine fabrics, delicate machinery, etc.

It reduces your cost, as one coat in opacity equals two coats of lead and oil.

It makes a splendid ground coat for an enamel finish.

It acts as a reflector on area walls, etc., etc.

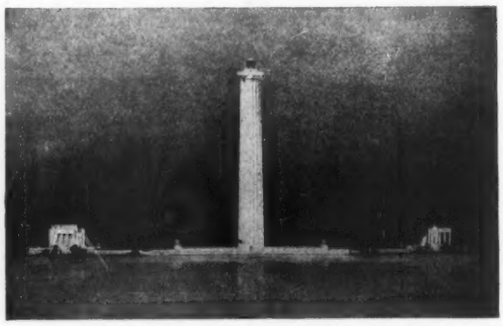
**Ask for Prices, Booklet J, Etc.**

**WADSWORTH, HOWLAND & CO., Inc.**

Paint and Varnish Makers and Lead Corroders

82-84 Washington Street
BOSTON, MASS.

New York Office, 101 Park Avenue at 40th Street



PERRY MEMORIAL, PUT-IN-BAY, OHIO

**MEDUSA GRAY AND WHITE PORTLAND CEMENT**

USED IN ITS CONSTRUCTION

Medusa is the first true white Portland cement ever manufactured, can be used for exterior as well as interior work, is perfectly white in color and stainless. It has been used by the U. S. Government in over 50 buildings in the past few years.

Write for free booklets and samples of

MEDUSA WHITE PORTLAND CEMENT

MEDUSA WATERPROOFING

MEDUSA WATERPROOFED CEMENTS
(GRAY AND WHITE)

SANDUSKY PORTLAND CEMENT CO.
SANDUSKY, O I O

WHITE PORTLAND CEMENT. SANDUSKY PORTLAND CEMENT CO. SANDUSKY, OHIO. STAINLESS.

*DIRECT HEAT*

# DRYERS

—FOR—

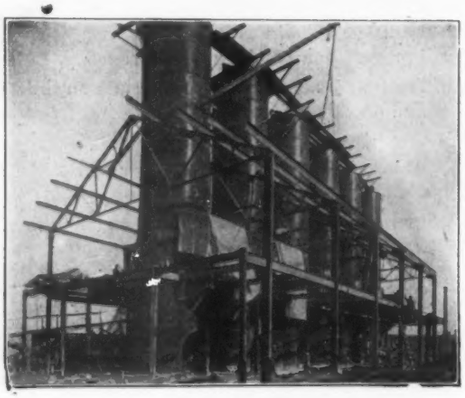
**BANK SAND**
**GLASS SAND**
**ROCK, CLAY**
**COAL, ETC.**

**All Mineral, Animal and Vegetable Matter.**

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

**American Process Company**
**68 William Street, NEW YORK CITY**

## Economy in Lime Burning



Installation of Six Doherty-Eldred Lime Kilns

**Write for Bulletin No. 4**

**Improved Equipment Co.**

**Combustion Engineers** EXECUTIVE AND SALES OFFICES 60 Wall Street, NEW YORK

Complete Coal Gas Plants
Complete Lime Burning Plants
Gas Producers
Muffle Furnaces
Special Industrial Furnaces
Refractory Materials

BACON ∖ FARREL
ORE & ROCK
CRUSHING ∖ WORLD KNOWN
**ROLLS-CRUSHERS**
EARLE C. BACON, ENGINEER
HAVEMEYER BUILDING, NEW YORK

**WORRELL'S ROTARY DRIERS**
(First Efficient Rotary Fire Driers Built)
DIRECT OR INDIRECT HEAT,
FOR SAND, CLAY, CRUSHED ROCK, GRAIN
and other granular or fiberous matter. High Efficiency, Durability and Simplicity.

IMPORTANT; In sending for prices and printed matter state your required hourly capacity, approximate % moisture in your product, etc., or mail pound sample in tin or glass.

S. E. WORRELL

Established 1879 — 209 Center St. — HANNIBAL, MO.

**Farnam "Cheshire" Lime Co.**

OF CHESHIRE, MASS.

MANUFACTURERS OF THE

**Celebrated Cheshire "Finishing" Lime**

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all

**HIGH GRADE FINISHING WORK**

Selling Department, 39 Cortlandt St., N.Y., C. J. CURTIN, Pres't.

Tell 'em you saw it in ROCK PRODUCTS

# ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.
DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

**Volume XIII.** **CHICAGO, NOVEMBER 22, 1913.** **Number 5**

THE FRANCIS PUBLISHING COMPANY
EDGAR H. DEFEBAUGH, Prest.
Seventh Floor, Ellsworth Bldg., 537 So. Dearborn St., Chicago, Ill., U. S. A.
Telephone Harrison 8086, 8087 and 8088.

EDITORS:
EDGAR H. DEFEBAUGH. FRED K. IRVINE.

Communications on subjects of interest to any branch of the industry are solicited and will be paid for if available.
Every reader is invited to make the office of Rock Products his headquarters while in Chicago.
Editorial and advertising copy should reach this office at least five days preceding publication date.

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Published on the 22nd of each month.
Entered as second-class matter July 2, 1907, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879.
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Plaster partition blocks are making a fine showing wherever they are used. The finished wall trims out plain and uniform and cracks and checks are unknown, because there is no unevenness in the expansion and contraction of materials.

Just read through the advertising pages of your copy of ROCK PRODUCTS the next cold and rainy day that comes along, and see if it will not make you as much money as the best busy day you had last summer. This very thing has been done over and over again by our readers. Why not you?

So long as road improvements are in the control of incompetent local politicians all our campaign work can avail but little. Get the light of intelligence into the state legislatures to provide for road improvements upon a definite plan and sensible control and see the wonderful change it will make.

Lime used to be one of the dealers' worst risks and surest troubles, but with the ever-growing demand for hydrate in safe and neat paper bags it is the surest thing he handles. The popularity of hydrate at the building job is well founded upon economy of time and uniformity of mortar; once started it is bound to grow.

The lowest bidder system of awarding contracts is just about the worst possible way to get good buildings. The dealers who supply building materials know this more practically than anybody else. By experience they learn how to size matters up so as to have the tablet of blank waivers of lien in readiness to clap upon the too-low job.

The Chicago Cement Show, February 12 to 21, 1914. Remember the date. It will be the greatest conclave of building material interests ever held. Make your arrangements now to visit Chicago at that time and get the best ideas of the biggest successes in your own line of business and apply them to your operations for larger opportunities in 1914. You are not too old to learn.

Plaster board is just as much of an improvement over the wooden lath as the electric light is over the tallow candle. There is no comparison in the finished plastered job where plaster board is used, because the shrinkage of the wood is not there to make the inevitable cracks where wooden lath is used. It amounts to the practical elemination of the principal criticism of otherwise perfect modern plastering.

Portland cement mortars for plastered exteriors, with the modern coatings and colorings, have opened a new vista to decorative art. Having gained recognition in many very classy structures the idea grows apace, and we shall soon see some very artistic progress in this direction. The permanent surface has been attained to withstand particular climatic conditions and development of the embellishment of color and contour has long been waiting for the opportunity.

St. Louis, the grand old French capital of the West, grown into the splendid modern city that we know, sits beside her mighty river in the midst of the richest as well as the biggest valley in the world. By the process of gravity alone the products of millions of farms and thousands of mines and quarries crowd her doors and press against her shores. She is the natural center of great commercial enterprise and the number and quality of her buildings bespeak her solid prestige. Primarily a clay country, she has developed all types of brick and clay products, second to none, while cement, lime, plaster, stone, and the whole list of building staples are represented by the enterprise of men as able and strong as the city of St. Louis and her position, like a fixed star in the firmament.

When we draw up to our Thanksgiving dinners to attack the festive bird we have every right to feel the full significance of the occasion. The busy season of 1913 is drawing to a close, and in spite of the forebodings in the early spring it has been a bully good business year—to many concerns the best to be found upon their records. Speculation building has shown a pronounced decline in nearly all of the large cities, especially in the line of mammoth office buildings, and it will take several years, perhaps, for the growth of industry to digest the oversupply of office space. Nevertheless every mill and every factory devoted to the production of building materials has been able to move out full tonnages and the distributors have had little difficulty in disposing of the whole supply at good prices. Yes, the dealer in building supplies, his customers, the contractors, as well as those who make the stuff have every right to thank the good Lord for such a year as 1913.

Why not employ a respectable builder for a stipulated sum of money for his services, equipment and organization to complete the job, and then pay labor and material bills at cost by the invoices and payrolls. This would wipe out the "building game" feature of contracting and bring building operations down to a business basis, where it rightfully belongs. The owner by this system would no longer be the "victim," but he would be in a position to order just what he wants either from his own knowledge or from the suggestions of able advisers and get what he pays for. Competition bidding upon building specifications is very much like playing crack loo, and quite as intelligent and trustworthy. Usually the contractor has no money to lose, and if he has money he don't intend to put it into anybody's job and stick it there. As soon as he finds that he has bid too low, right then and there begins a systematic skinning of the job to get it safely inside the danger line, and the owner gets all he pays for but less than he expects, and the shortage comes out of the quality of his finished job. There are still owners roaming around who are looking for half-fledged contractors to make mistakes in their estimates and then require them to give bond and so get the job completed at the bondsman's cost, but that dishonest and immoral plan can't be made to work one time in a hundred these days and so is not worth trifling with. Just drop the game idea in building and get down to sound business; then see how easy collections will be and how much greater the satisfaction all around.

# EDITORIAL CHAT

**COMING ASSOCIATION MEETINGS.**

American Concrete Institute, Auditorium Hotel, Chicago, Ill., February 16-20, 1914.
American Road Builders' Association, First Regiment armory, Philadelphia, Pa., December 9, 10, 11 and 12; tenth annual meeting.
American Face Brick Association, French Lick, Ind., December 10 and 11.
Eighth Mid-West Cement Show, Auditorium, Omaha, Neb., January 30 to February 4, 1914.
Face Brick Dealers' Association, French Lick Springs, December 10, 11 and 12.
Illinois Lumber and Builders' Supply Dealers' Association, Chicago, Ill. Date announced later.
Interstate Cement Tile Manufacturers' Association, Chicago, Ill., February 17-19, 1914.
Mason Material Dealers' Association of New Jersey. Annual meeting Thursday, March 12, 1914.
National Builders' Supply Association, Hotel La Salle, Chicago, February 17-18, 1914.
National Association of Sand and Gravel Producers, Chicago, Ill. Date announced later.
National Conference on Concrete Road Building, Chicago, Ill., February 12, 13 and 14, 1914.
Nebraska Cement Users' Association, Omaha, Neb., January 30 to February 4, 1914; ninth annual convention.
Seventh Chicago Cement Show, Coliseum, Chicago, Ill., February 12-21, 1914.
New England Builders' Supply Association. Date announced later.
The Sand-Lime Brick Association, Harrisburg, Pa., December 9 and 10.

Charles Burton, traveling representative of the Burton Powder Company, Empire building, Pittsburgh, Pa., was a recent visitor to the mining and quarrying trade of Philadelphia, on business pertaining to the blasting department of the company.

The minutes of the Sixth Congress of the National Association for Testing Materials, which was held in New York City, has just been issued. These congress minutes are the second part of Volume 2 of the National Association, which covered the period of May, 1910, to May, 1913.

D. M. Kirk, president of the Crescent Portland Cement Company, of Wampum, Pa., has been an active supporter of the movement started by the business men of that city to establish a local board of trade. Mr. Kirk rendered an address before a meeting of the organizers on November 14 in which he said that his company would do everything possible to make the proposed board of trade a success, and that such an organization was a necessity of great importance to Wampum.

A. A. Pauly, the well known inventor of the Pauly hollow concrete tile, was recently a Chicago visitor. He has just returned from the canal zone, where he installed an extensive plant for the government to manufacture tile for the construction of permanent buildings in the new city of Balboa, which is to be the great permanent city of the canal zone. Mr. Pauly, among his other accomplishments, has learned to speak Spanish. He says they have summer all the year round at the canal zone, and that now the efficient health authorities have cleaned up the mosquito nuisance, it will some day be a health resort, instead of a menace to health, as in all past times.

The Bureau of Standards of the Department of Commerce has just issued Bulletin No. 16 entitled "The Manufacture of Lime," by Warren E. Emley, assistant chemist. The pamphlet is the first comprehensive work published by the department on the subject of the manufacture of lime and is a first-class specimen of basic literature upon which to found the future edifice of lime technology and practice. In his work Mr. Emley has carefully gone over the manufacture of lime as it exists in the United States today, giving the technique of the commercial establishments who are producing lime for the markets of this country, together with the methods of operation and the types of their equipment. In all respects it is a meritorious publication and one which every progressive lime manufacturer should study carefully as a start in the broader knowledge of limestone in its natural formation, in the process of manufacture and in its uses in the arts. Most of the lime manufacturers are somewhat familiar with the work that Mr. Emley has been doing for the past few years and this pamphlet, covering all of his reports, will prove doubly interesting for that reason.

The new quarters of the Los Angeles Builders' Exchange in the Stimson block are now complete, and the Exchange is planning a formal opening.

Albert Moyer, sales manager of the Vulcanite Portland Cement Company, New York, has a pronounced vein of the artistic in his temperament. In criticizing art in photography he says that the majority of photographs lack the living principle of action. He recently sat for a photograph in New York, which picture was taken with him in the act of lighting his pipe. This specimen of photographic art shows Mr. Moyer's idea of action in a portrait. Mr. Moyer has done a great many things in the artistic line with permanent finishing of cement surfaces and other things. A few years ago he built a house in which he used colored tile in connection with concrete masses, which has been considered one of the best specimens of useful and pleasing concrete work. He has written many things which have had no little influence in the development of some of the best points of concrete in many of its uses. All this is incidental to his active and direct work in selling the output of the big mills of the Vulcanite company and demonstrates that his constructive brain so operates as to make his work and his pastime one continuous pleasure to him.

ALBERT MOYER, SALES MANAGER, VULCANITE PORTLAND CEMENT CO., NEW YORK, N. Y.

The non-resident lecturers in the Graduate Course in Highway Engineering at Columbia University appointed for the 1913-1914 session are as follows: John A. Bensel, New York state engineer; William H. Connell, chief, Bureau of Highways and Street Cleaning, Philadelphia; C. A. Crane, secretary, the General Contractors' Association; W. W. Crosby, chief engineer, Maryland Geological and Economic Survey, and consulting engineer; Charles Henry Davis, president, National Highways Association; John H. Delaney, commissioner, New York State Department of Efficiency and Economy; A. W. Dow, chemical and consulting paving engineer; H. W. Durham, chief engineer of highways, Borough of Manhattan, New York City; C. N. Forrest, chief chemist, New York Testing Laboratory; Walter H. Fulweiler, chief chemist, United Gas Improvement Company; Frank B. Gilbreth, consulting engineer; George P. Hemstreet, superintendent, the Hastings Pavement Company; Samuel Hill, president, American Road Builders' Association; D. L. Hough, president, the United Engineering and Contracting Company; J. W. Howard, consulting engineer; Arthur N. Johnson, state highway engineer of Illinois; William H. Kershaw, manager, paving and roads division, the Texas Company; Nelson P. Lewis, chief engineer, Board of Estimate and Apportionment, New York City; Harold Parker, first vice president, Hassam Paving Company; Paul D. Sargent, chief engineer, Maine State Highway Commission; Philip P. Sharples, chief chemist, Barrett Manufacturing Company; Francis P. Smith, chemical and consulting paving engineer; Albert Sommer, consulting chemist; George W. Tillson, consulting engineer to the president of the Borough of Brooklyn, New York City.

Stuart Ralph, formerly secretary of the Builders' Exchange, Memphis, Tenn., is now connected with the firm of McKnight & Merz, general contractors, at Jackson, Tenn.

The Ceresit Waterproofing Co., of Chicago, has just been awarded a Gold Medal at the International Builders' Exhibition at Leipsig. This is the second time that the Ceresit Waterproofing Co. has been honored this year, they having received the Grand Prix at the World's Exhibition at Ghent.

T. E. Hubert has resigned his position as superintendent of the plaster plant of the Colorado Portland Cement Co., at Portland, Colo., to become superintendent of the Oriental Cement Plaster Co., at Oriental, N. M. The general offices of the latter concern are in the Commerce building, Kansas City, Mo.

The Canada Pebble Co., Ltd., of Port Arthur, Ont., through the Chicago office operated by George M. Thompson, recently secured the contract for supplying the grinding pebbles to the United States Reclamation Service of New Mexico. The pebbles on this contract are to be utilized in the government cement plant at Elephant Butte, near Engle, New Mexico.

California members of the National Lime Manufacturers' Association have lately communicated with some of their friends in the east regarding the proposition to hold the summer convention for 1915 in San Francisco, and the idea seems to commend itself strongly to those from whom replies have been received. It is announced that the matter will be taken up at the next meeting.

Former Governor Geo. W. Donaghey, of Arkansas, since his term of office expired, has returned to the contracting business and now has some big work on hand. He made a most capable chief executive of Arkansas and to his good judgment is due the completion of the big new capitol job that for a long time proved a veritable "white elephant" on the hands of the state. The Stiewell building, erected in 1873 at 1021 West Sixth street, Little Rock, is now being razed by Mr. Donaghey for a large business building there.

R. Stanley Roads, the clay products salesman of wide renown, who has always been one of the star performers of the Ohio clay fields, has removed his activities to Missouri and is taking up the sales division of the Evens & Howard Fire Brick Company, fire brick, sewer pipe and pavers, with headquarters at St. Louis. In his new connection Mr. Roads is visiting his old friends in the trade as well as making new ones in the broader territory. But it is the same old story that he tells and the same honest, happy personality that is always with us.

T. E. McGrath and W. A. Evans, of Lincoln, Ill., have closed a contract with a railroad operating through, Chillicothe, Ill., for their new sand and gravel plant at that place. They secured a twenty years' lease on the railroad company's ground, and will at once erect a new and modern plant. This opens up a large new territory for the company, which has been making some rapid strides since it built its new plant at Mackinaw. The new pit opens the entire northern part of the state to this firm. The offices of Mr. McGrath will be moved from Lincoln to Peoria this winter, and both of the plants will be operated from that point.

Pittsburgh recently held an "old home" week which was a "stunner" in civic enterprise. A mammoth automobile parade lasting two hours was held and covered twelve miles. Eight hundred and fifty machines, including trucks, made up the procession, which was 45 minutes in passing the reviewing stand. The B. F. Goodrich Company, which maintains a Pittsburgh branch, was highly gratified at this monster turnout, there being more than 50 per cent of the machines using the Goodrich tires. "Hilly Pittsburgh presents a problem to the motor truck user and the tire that can stand the racket has become very popular," C. O. Sellman, of the Goodrich company's Pittsburgh branch. "The excellent attention given truck users at the service station of the local branch has done much to establish Goodrich wireless tires in favor." The parade attracted immense throngs and was received with much enthusiasm, especially those cars containing unusual or unique decorations. Thirty-three organizations were represented in the parade and the total cost of the cars in line was more than $1,700,000. There were 180 different makes of cars in the parade.

## THANKSGIVING.

I

The year is growing gray again, as other years have grown,
The winds of Winter play again, as other winds have blown;
The leaves fall all reluctant, from clinging branches where
Soft Summer swelled their veins of green with magic beauty rare.
But sweet as was the Springtime, and Summer sweeter still,
The golden, mellow Autumn glow their promises fulfill.
The ripened year exultant, with open lavish hands,
The Summer's full fruition holds, and calm, triumphant stands.

II

Ten hundred thousand years have fled, and each succeeding Fall
Has turned the Summer green to red, and heard the north wind call;
Ten hundred thousand Autumns have come and gone their way,
And always brought their bounty when the year is growing gray.
The grace of God unfailing through the circle of the years
Has built a faith undying as the Autumn harvest nears,
And faith finds its expression in the grateful, humble way
We celebrate the harvest home on each Thanksgiving day.

### AMERICAN INSTITUTE OF ARCHITECTS ANNUAL CONVENTION.

The forty-seventh annual convention of the American Institute of Architects will be held in New Orleans on December 2-3-4, 1913, with headquarters at the Grunewald Hotel. An elaborate program has been prepared and this meeting of the Institute will have a distinguished bearing on the architectural activities of the future. In selecting the city of New Orleans as the meeting place the American Institute of Architects is taking advantage of that city's peculiarly interesting advantages. There is much in the city itself to which the modern architect can point with pride as marking the progress of the present era, and then there are those ancient buildings still standing wherein is embodied the architecture of the first stages of American city development. These old French and Spanish buildings are an attraction in the city of New Orleans appealing particularly to the architect. For that reason New Orleans is offering to the American Institute of Architects a special opportunity for the making of their forty-seventh annual convention a success to be remembered.

### THE MISSISSIPPI RIVER LEVEE ASSOCIATION.

The Mississippi River Levee Association, with offices in the city of Memphis, has recently been incorporated under the laws of the state of Tennessee. Its directors represent various sections of the country and will conduct its affairs as carefully as those of other corporations. It is composed of commercial bodies, municipalities, levee boards, corporations and individuals, for the purpose of proving that the alluvial lands of the Mississippi River Delta can be permanently protected from overflow by levees; that the reclamation of these lands is of pecuniary interest to the whole United States; that it is the duty of the National Government to construct these levees as soon as possible, in a thorough and scientific way, and that the people of the territory affected by floods will in the future, as in the past, bear their just and fair proportion of this work.

The association will gather and disseminate accurate data and reliable information concerning floods of the lower Mississippi river and the certainty of their prevention by an adequate system of levees. The reclamation of this territory will increase the cotton area of the United States by one-third.

The Mississippi River Commission estimates $58,000,000 as necessary to complete the levees and make them of sufficient size and strength to withstand the greatest floods.

In the accomplishment of this great task, the results will affect the entire nation, both through agricultural and realty activities, and through the great construction industries; for the erection of these levees will require millions of tons of material and thousands of workmen to complete the pacification of "The Father of Waters."

The officers and directors of the association include some of the leading merchants of the United States, from New York, Chicago, St. Louis, New Orleans and other Southern cities. The officers are A. S. Caldwell, president, banker, Memphis, Tenn.; C. P. J. Mooney, vice president, managing editor, Commercial Appeal, Memphis, Tenn.; James F. Hunter, secretary, vice president U. & P. Bank and Trust Co., Memphis, Tenn., and John A. Fox, secretary-manager, Scimitar building, Memphis, Tenn.

**Willie's Reward.**

Willie—Paw, what is a free thinker?
Paw—An unmarried man, my son.
Maw—You may go to bed, Willie.

**Hard to Crack.**

Teacher—"Tommy, what is an oyster?"
Tommy (after thinking deeply)—"It's a fish built like a nut."

**No, Indeed!**

An English suffragette struck John Redmond, the Irish leader, on the head the other day and then emptied a bag of flour over him. No estimate of the benefit that was thus won for the cause of woman suffrage has as yet been made.

The Schaffer Engineering & Equipment Co., of Tiffin, Ohio, has been awarded the contract for the drawings, specifications and supervision of the new $12,000 school building to be erected at Republic, Ohio. The building is to be of brick, faced with vitrified brick and will be heated by the hot air system. It is the intention to make this structure the best school buildings in that locality.

# ··· FOR THE ··· RETAILER

**THE NATIONAL BUILDERS' SUPPLY ASSOCIATION.**
(Meets Annually.)

**Officers.**

President—Edward S. Walton, Youngstown, Ohio.

Treasurer—Henry W. Classen, Baltimore, Md.

Secretary—Frank J. Davis, Youngstown, Ohio.

## A CONSOLIDATION OF IMPORTANCE.

**Business Interests of Two Leading Buffalo Building Material Concerns Will Increase Facilities by Operating As One Organization.**

The consolidation of the Buffalo Builders' Supply Company and M. A. Reeb, two leading building supply concerns in the city of Buffalo, was announced on Thursday, November 13, with the filing in the office of the county clerk, incorporation papers for the Buffalo Builders' Supply Company, with a capitalization of $550,000. The amalgamation of these two concerns indicate the gigantic proportions to which the business engaged in has reached. Through the one company resulting from the consolidation, every department of the operations will be provided with increased facilities for the maintaining of resources which will meet all future development and extension of the business. The directors of the consolidated company for the first year are as follows:

John H. Baker, Baker & Watson, bankers; Charles B. Hill, president of the Buffalo Abstract & Title Company; Ralph A. Kellogg, Kellogg & Baker, attorneys; John H. Lascelles, vice-president of Marine National Bank; Earl P. Lothrop, director Buffalo Loan, Trust & Safe Deposit Company; M. A. Reeb, president Niagara Gypsum Company; Daniel W. Streeter, treasurer Buffalo Weaving & Belting Company; Arnold B. Watson, Baker & Watson, bankers; W. E. Grimm and S. Marland Hamilton, Charles L. Hayes, William L. Markham and Bryant H. Prentice, directors of original Buffalo Builders' Supply Company.

In making the announcement of this plan for business extension by consolidation, the new company issued the following statement:

"The builders' supply business, as it has been developed in large centers, plays a very important part in modern commercial life. Steel and reinforced concrete, as the basic commodities which form the modern structure, have taken the place of the former ordinary type of factory and office building, largely built of wood. The result has been that the builders' supply business has superseded the lumber and mill interests in the furnishing of the various materials for building construction.

"Concrete takes the place of quarried building stone for the foundation; terra cotta, ornamental and common brick, concrete with metal lath and stucco supplant the former walls of wood. Hollow tile or reinforced concrete supersedes matched lumber for flooring. Partitions are now of gypsum block or tile instead of wooden studding and lath. For window frames, doors, baseboard and even picture moulding, the metal article has taken the place of wooden trim for these purposes.

"Thus the builders' supply business has grown from furnishing a mason with a few barrels of cement and lime for foundations and walls to the supplying of nearly all the materials necessary in the erection of a modern fireproof building.

"The trade in Buffalo and vicinity is served from several warehousing points with the proper railroad facilities, these points being carefully selected with the purpose of eliminating long hauls and reducing the carting expense. The warehouses of the Buffalo Builders' Supply Company, Inc., are located at Grote street and the New York Central Belt Line, Genesee street and the New York Central Belt Line, Moore & Elk streets on the New York Central, Lackawanna City on the Pennsylvania railroad and River street on the Grand Trunk railway."

ROCK PRODUCTS joins with a host of other friends of the new Buffalo Builders' Supply Company, Inc., in wishing them continued success and a new era of business prosperity.

## LOUISVILLE RETAILERS.

**Building Season Is Practically Closed—Roofers Busy—Cullen Concrete Block Co. Will Do a General Retail Business in Building Supplies.**

Louisville, Ky., Nov. 18.—Very little goods of any kind are moving among dealers in building materials, the most active line lately having been roofing. A number of days of fine weather in this vicinity gave many building owners a chance to get their roofs in good shape before bad weather began in earnest, and this was taken advantage of, as a week or so of rainy weather had given warning of the sort of thing to be expected. Aside from this, however, there has been small demand either for finished or raw material.

Roofing has been a fairly good line for the past few weeks with the Louisville Roofing & Supply Company, according to H. Jessup. There is very little demand for pipe covering, which is one of the staple lines with the company, and the small amount of building going on gives little indication of any better demand for some time to come.

"There is nothing much going on and nothing much in sight," was the way Edward Streicher, of the National Roofing & Supply Company, described the situation. The company is receiving enough small orders to keep things moving, however, and is looking forward to spring to show more activity, like the rest of the trade.

Owen Tyler has an excellent winter line in the Monarch metal weather strip, and is making the most of it while the market on brick has slumped down to almost nothing, and other building materials are in like case. The first windy and wintry blasts of a good cold snap furnish Mr. Tyler with a first-class selling argument for the Monarch strip, and his force has had good success with it of late. Mr. Tyler recently addressed to the directors of the Louisville Commercial Club a letter making a good suggestion, to the effect that a building be erected at the State Fair Grounds for an annual display of Louisville made products. The success of the recent "Made in Louisville" exposition indicates that a permanent institution of the sort proposed by Mr. Tyler would meet with equal favor, and it is probable that Louisville brick, tile, concrete block and other manufacturers will have such a building on the Fair Ground by next year.

The Culley Concrete Block Company, which has handled a good business in blocks and other building materials at its plant at Brook and Tenth streets for some time, recently took advantage of an opportunity to establish a West End plant by the purchase of the property of the old Home Building Association at Hemlock and the K. & I. tracks, in Parkland. The property was used for the storage and production of millwork of all sorts used in house building by the company, and will suit the company's purposes admirably. A branch for the service of the western part of the city, which is developing rapidly, and which offers a fine field for its products, has been sought by the company for some time, and it is immensely pleased with the property just purchased. Cement, sand and gravel will be handled at the plant, besides concrete blocks and columns, machinery for the making of which will be installed in time for the spring trade.

The Builders' Exchange of Louisville, will entertain the annual convention of the National Building Trades & Employers' Association, which will meet here January 21-23. About 600 are expected to attend the convention. The Louisville exchange is now appointing committees on entertainment and otherwise preparing to take care of their guests. A feature of the convention will be the discussion of a standard form of contract, agitation for this having been started some time ago by the Louisville organization. A meeting of secretaries of builders' associations will be held in Louisville January 19 and 20 in connection with the other convention.

The Memphis Building Material Men's Club is being launched here. It will closely affiliate with the Business Men's Club. Those interested are: W. W. Fischer, P. A. Cates, Phil Pidgeon, Mallory Davis, S. J. House, Jr., S. Samuels, A. J. Cook, Frank Curtis, Austin Carey and others.

## PITTSBURGH RETAILERS.

**Twelve-Inch Snow Puts Temporary Blanket on Building Operations—A Lively Demand in All Lines Anticipated.**

Pittsburgh, Pa., Nov. 18.—Business with the retail dealers and builders' supplies people here has been especially good the past two months, according to most reports. It is rapidly disappearing this week, however, owing to the 12-inch snow that has put a blanket on all operations for a few days. The prospects are that with the inventory season close at hand retailers will let their supplies run down as low as possible and will be comparatively quiet from now until January 1st. The gist of the reports received shows that 1913 to date has shown a total of sales away ahead of last year. Those concerns which have been fortunate enough to get in on the big buildings down town have a whole lot to be thankful for. House building has been a little more in evidence the past few weeks. Some nice projects are coming onto the boards even now and from architects and contractors it is learned that the prospects for next year's building in this line are improving steadily. The general belief is that all things are working together for a prosperous 1914 in Pittsburgh. Unless serious labor troubles intervene next year business looks very flattering and dealers here are inclined to be confident and hopeful as to the present and future situation.

Miller & Coulson have very little complaint to make about business in general as their plants in Ohio and western Pennsylvania have been very busy all summer and are likely to continue so. The demand for their building block is increasing rapidly and prices are reported to be good.

Robert K. Cochrane, president of the Pittsburgh Builders' Exchange, gave a very interesting talk to the Pittsburgh Association of Credit Men at a recent luncheon in the Fort Pitt hotel. His theme was "How Builders Can Promote Progress of Pittsburgh."

John F. Sweeney, one of the best known house builders in this city, is very hopeful of the outlook for house building next year. He says that conditions in Pittsburgh are better than they have been for six years; that prosperity is here and it can be kept right along through the real estate men and the house builders. As Mr. Sweeney has built hundreds of small houses in all parts of Greater Pittsburgh, his information is given much weight by builders' supply men.

## SAN FRANCISCO RETAIL NEWS.

San Francisco, Nov. 18.—The local demand for building materials is keeping about up to the year's average, but the scarcity of money for building operations tends to hold new work in check, and the last month has brought out few jobs of importance. Municipal improvements, however, are being financed with less difficulty than for some time past; while there are many important private buildings about ready for figures, and it looks as if the new year would open with an all-around improvement. Local building permits last month showed a valuation of only $1,118,280, against $1,722,860 for the corresponding month last year; while in Los Angeles the valuation was $1,692,759, a drop of nearly $1,000,000 from last year's figures. Oakland shows a slight gain, but most Coast cities show a tendency to curtailment.

In a few of the interior towns, retail business has been about normal, but the demand in most districts has been rather limited. This is partly due to financial conditions, but more to the apprehension that has until lately been felt as to the possibility of another dry year. A heavy rain this month has brought a much more optimistic feeling, and stimulated trade a little, but it is too late to expect much real improvement before spring. Notwithstanding the past dry year, crops have been very fair, and prices high; and it is felt that all conditions are favorable in California for an extremely active year in 1914.

Louis Lee, a contractor who is putting up an apartment house on Geary street, is using an automobile for hoisting purposes. The car is hitched to a lift, and by running the car forward it draws the load from the ground to the upper stories. Twenty wagon loads daily of gravel, crushed rock, cement, etc., are hoisted in this manner.

R. A. Nichols, of Oil City, Pa., is organizing the Baltimore Roofing & Asbestos Company and will shortly remove the Oil City plant to Finksburg, Md., where a fine asbestos deposit has recently been discovered. The company now has under way at this point an 800-foot main building and two other buildings, each 500 feet long. Dr. E. R. Foutz is treasurer of the company and A. O. Enigh is general manager.

## MILWAUKEE RETAILERS.

Milwaukee, Wis., Nov. 18.—Much interest has been aroused in local building circles by the announcement of Building Inspector W. D. Harper that the building code commission, which has been working for two or three years, will have the new building code for Milwaukee completed within two months, so that all laws affecting the construction of buildings in this city will be in compact form.

Building activity has been increasing in Milwaukee despite the lateness of the season. During the past week there were 99 permits issued for structures to cost $446,485, as compared with 93 permits, representing an investment of $212,032 during the corresponding period in 1912. Building operations during the month of October showed a gain over the corresponding month a year ago. Permits to the number of 362 were issued, representing an investment of $1,214,638, as compared with 423 permits for structures to cost $1,187,766 during October, 1912.

Building Inspector Harper believes that the high building record of 1912 will be equaled, as a result of several large structures which are yet to be started this year. Among the number are the $250,000 store to be erected on the South Side by Edward Schuster & Co., and a $100,000 six-story building planned for the Ticonic Investment Co. at Jackson and Huron streets.

Milwaukee shippers of building material, crushed stone and similar lines, are among the business interests which are fighting the new team track storage rules proposed by the railroads, which will make additional charges for cars held on tracks longer than forty-eight hours. They hold that the demurrage charge of $1 a day per car is sufficient without the added storage rules. The rules are now in force on interstate commerce shipments, but efforts are being made by shippers in all lines to prevent their application on intrastate business.

A series of hearings on this subject was held in Milwaukee some time ago before the Wisconsin railroad commission and shippers of building material, brick and crushed stone were represented, together with other business interests. Evidence was received from representatives of the railroads, manufacturers, jobbers and dealers and the interest in the hearings increased as the sessions progressed.

It is the opinion of those who have studied the situation carefully that the final report of the railroad commission will rule against the application of the new team track storage charges on commerce within the state of Wisconsin. The final report of the railroad commission is not expected for several months.

## NEW SUPPLY CONCERN HOLDS FORMAL OPENING.

The Euclid Brick & Supply Co., the newest of Cleveland's building material firms, held a housewarming on Oct. 25 at its offices in the Leader-News building. It will carry a complete line of brick, terra cotta and general clay goods.

The new company, in the short time since its organization, has opened up and is running three large warehouses and will have a fourth in operation by Jan. 1.

Officers and directors of the new company are: W. F. Elrick, president; W. B. Ferris, vice president; Clarence Griese, secretary and treasurer; J. J. Rowe, manager; H. H. Wilson, assistant manager, and Alexander Winton of the Winton Motor Car Company, who is largely interested in the new company, director.

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General Roofing Mfg. Co., Richmond, Va.; capital $50,000.

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Ashland Manufacturing Company, Ashland, Ky., was incorporated with capital stock of $60,000 to manufacture waterproof material.

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Fire among the tar and creosote vats of the J. I. Gray Roofing Company, 315 West Pine street, Oklahoma City, Okla., a few days ago slightly damaged the plant.

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The Barrett Manufacturing Company of New York, well known roofing and building concern, with a capital stock of $4,870,000 and interests of $20,000 in Wisconsin, has filed a statement to transact business in the Badger state.

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The Advance Manufacturing Company is the name of a new concern to be started at Advance, N. C., by W. E. Axssom of Spencer, and J. A. Axssom of Boonville. All kinds of building material, mantles and specialties will be manufactured.

## BUILDING FALLS OFF 15 PER CENT.

Ninety-seven principal cities show a loss of 15 per cent in building operations in October in comparison with the corresponding period a year ago. Official reports to CONSTRUCTION NEWS from ninety-seven cities show that permits were taken out in October for 21,517 buildings, aggregating in cost $56,082,966, against 22,887 buildings, involving a total cost of $66,242,248 for the same month a year ago, a decrease of 1,370 buildings and $10,160,282. The figures in detail are as follows:

| Cities. | 1912 No. of Bldgs. | 1912 Estimated Cost | 1913 No. of Bldgs. | 1913 Estimated Cost | % Gain | % Loss |
|---|---|---|---|---|---|---|
| Chicago | 1,020 | $ 9,314,000 | 1,178 | $ 8,745,500 | 6 | .. |
| Boston | 449 | 4,583,000 | 449 | 5,797,000 | .. | 21 |
| New York (Boros Man. and Bronx) | 395 | 3,349,497 | 370 | 4,722,489 | .. | 29 |
| Detroit | 809 | 3,079,540 | 846 | 2,544,005 | 21 | .. |
| Philadelphia | 1,394 | 2,716,850 | 1,406 | 3,644,225 | .. | 25 |
| Brooklyn, N. Y. | 914 | 2,553,080 | 1,123 | 3,379,847 | .. | 24 |
| Cleveland | 1,034 | 1,979,075 | 954 | 1,916,260 | 3 | .. |
| Los Angeles | 1,400 | 1,701,550 | 1,646 | 2,677,780 | .. | 43 |
| Kansas City, Mo. | 317 | 1,540,705 | 416 | 893,335 | 72 | .. |
| Buffalo, N. Y. | 419 | 1,347,000 | 491 | 1,616,000 | .. | 16 |
| Minneapolis | 551 | 1,240,950 | 514 | 1,117,380 | 11 | .. |
| Milwaukee | 350 | 1,210,132 | 423 | 1,189,786 | 2 | .. |
| San Francisco | 559 | 1,118,280 | 563 | 1,722,860 | .. | 34 |
| Toledo | 257 | 868,165 | 215 | 404,553 | 114 | .. |
| St. Louis | 736 | 820,073 | 880 | 1,454,125 | .. | 43 |
| St. Paul | 387 | 804,253 | 309 | 869,946 | .. | 7 |
| Albany, N. Y. | 261 | 751,965 | 283 | 365,575 | 113 | .. |
| Oakland, Cal. | 348 | 777,387 | 465 | 836,169 | .. | 7 |
| Rochester, N. Y. | 314 | 735,403 | 373 | 915,121 | .. | 19 |
| Baltimore | 257 | 697,606 | 253 | 1,019,554 | .. | 32 |
| Portland, Ore. | 631 | 681,710 | 627 | 1,026,585 | .. | 33 |
| Newark | 317 | 675,530 | 363 | 773,748 | .. | 12 |
| Washington, D. C. | 381 | 660,932 | 558 | 803,123 | .. | 17 |
| Hartford | 131 | 608,505 | 107 | 422,865 | 43 | .. |
| Columbus | 271 | 590,005 | 264 | 341,943 | 43 | .. |
| Indianapolis | 404 | 573,048 | 444 | 757,445 | .. | 24 |
| San Diego | 302 | 563,779 | 471 | 884,319 | .. | 36 |
| Dallas | 150 | 519,435 | 137 | 274,875 | 81 | .. |
| Worcester, Mass. | 131 | 494,044 | 148 | 739,500 | .. | 33 |
| Seattle | 331 | 474,100 | 799 | 374,045 | 23 | .. |
| Akron | 270 | 463,425 | 238 | 490,545 | .. | 5 |
| Utica, N. Y. | 107 | 457,702 | 73 | 180,132 | 154 | .. |
| New Bedford, Mass. | 117 | 358,000 | 97 | 170,000 | 138 | .. |
| Sioux City, Ia. | 70 | 360,863 | 50 | 156,965 | 129 | .. |
| Atlanta, Ga. | 325 | 338,340 | 413 | 2,115,667 | .. | 83 |
| Louisville | 210 | 328,580 | 258 | 534,010 | .. | 25 |
| Springfield, Mass. | 108 | 327,493 | 122 | 434,995 | .. | 25 |
| Omaha | 91 | 307,025 | 109 | 235,365 | 30 | .. |
| Peoria | 57 | 291,909 | 43 | 151,875 | 92 | .. |
| San Antonio | 290 | 275,405 | 358 | 231,245 | 24 | .. |
| Portland, Me. | 30 | 268,184 | 47 | 137,965 | 87 | .. |
| Grand Rapids, Mich. | 165 | 257,863 | 196 | 218,098 | 14 | .. |
| Birmingham | 368 | 254,741 | 324 | 252,375 | .. | .. |
| Dayton | 75 | 252,225 | 70 | 196,550 | 28 | .. |
| Sacramento | 127 | 236,245 | 94 | 385,378 | .. | 41 |
| Brockton, Mass. | 44 | 228,435 | 63 | 179,265 | 24 | .. |
| New Haven | 97 | 214,785 | 123 | 399,465 | .. | 46 |
| Duluth | 142 | 213,459 | 106 | 178,785 | 18 | .. |
| New Orleans | .. | 208,750 | .. | 167,632 | 11 | .. |
| Youngstown | 75 | 207,680 | 112 | 246,780 | .. | 16 |
| Wilkes-Barre | 55 | 206,687 | 71 | 221,104 | .. | 26 |
| Memphis | 306 | 196,990 | 316 | 750,891 | .. | 74 |
| Elizabeth, N. J. | 62 | 180,405 | 60 | 165,339 | 9 | .. |
| Erie, Pa. | 94 | 179,813 | 144 | 348,873 | .. | 48 |
| Paterson, N. J. | 55 | 179,605 | 53 | 159,587 | 8 | .. |
| Salt Lake City | 73 | 171,795 | 57 | 209,476 | .. | 18 |
| Berkeley | 109 | 158,059 | 105 | 222,950 | .. | 29 |
| Ft. Wayne, Ind. | 59 | 155,385 | 69 | 227,415 | .. | 32 |
| Harrisburg | 87 | 153,610 | 33 | 51,175 | 200 | .. |
| Davenport | 49 | 149,960 | 35 | 88,100 | 70 | .. |
| Richmond, Va. | 87 | 147,060 | 88 | 426,320 | .. | 58 |
| Spokane | 78 | 140,840 | 109 | 145,840 | .. | 3 |
| Evansville | 110 | 137,326 | 126 | 230,695 | .. | 40 |
| Pasadena | 169 | 133,920 | 148 | 198,024 | .. | 32 |
| Somerville, Mass. | 39 | 132,660 | 33 | 193,350 | .. | 31 |
| Savannah | 71 | 129,010 | 77 | 145,150 | .. | 11 |
| Trenton | 83 | 127,021 | 131 | 178,234 | .. | 28 |
| Wilmington | 64 | 123,902 | 53 | 189,817 | .. | 34 |
| Tampa, Fla. | 136 | 114,163 | .. | 199,753 | .. | 42 |
| Springfield, Ill. | 35 | 110,015 | 32 | 78,915 | 39 | .. |
| Stockton, Cal. | 52 | 109,668 | 32 | 75,975 | 39 | .. |
| Reading, Pa. | 35 | 109,125 | 32 | 88,875 | 23 | .. |
| Scranton | 39 | 100,351 | 69 | 120,318 | .. | 16 |
| Ft. Worth | .. | 96,050 | 47 | 139,950 | .. | 31 |
| East St. Louis, Ill. | 68 | 92,615 | 40 | 41,566 | 120 | .. |
| Chattanooga | 215 | 89,470 | 215 | 87,840 | 54 | .. |
| Lincoln, Neb. | 47 | 89,037 | 45 | 74,585 | 19 | .. |
| Allentown, Pa. | 40 | 79,900 | 41 | 561,550 | .. | 85 |
| Syracuse | 41 | 78,985 | 110 | 330,778 | .. | 76 |
| Norfolk | 56 | 77,394 | 68 | 348,513 | .. | 78 |
| Nashville | 45 | 73,496 | 50 | 65,518 | 12 | .. |
| Kansas City, Kan. | 77 | 69,670 | 50 | 54,875 | 26 | .. |
| Passaic, N. J. | 27 | 65,325 | 35 | 60,510 | 8 | .. |
| Lawrence, Mass. | 20 | 63,000 | 21 | 93,400 | .. | 32 |
| St. Joseph, Mo. | 56 | 61,125 | 77 | 115,525 | .. | 47 |
| San Jose | 55 | 60,027 | 61 | 104,075 | .. | 43 |
| Topeka, Kan. | 52 | 51,695 | 65 | 76,387 | .. | 32 |
| Pueblo | 17 | 44,889 | 20 | 38,518 | 17 | .. |
| Holyoke, Mass. | 20 | 44,500 | 20 | 290,300 | .. | 84 |
| Charlotte, N. C. | 35 | 41,100 | 66 | 76,832 | .. | 46 |
| South Bend | 28 | 40,350 | 89 | 131,617 | .. | 69 |
| Lowell | 43 | 39,965 | 50 | 111,490 | .. | 64 |
| Saginaw | 42 | 36,589 | 33 | 20,875 | 74 | .. |
| Colorado Springs | 35 | 20,750 | 25 | 139,881 | .. | 85 |
| Bayonne, N. J. | 9 | 19,932 | 35 | 108,845 | .. | 81 |
| Bridgeport, Conn. | .. | 18,573 | 102 | 253,414 | .. | 92 |
| Hoboken | 23 | 16,414 | 20 | 16,073 | 2 | .. |
| Total | 21,517 | $56,082,966 | 22,887 | $66,242,248 | .. | 15 |

There is apparently a temporary contraction all along the line, evidence of which is to be found in the fact that there were losses in fifty-six cities and gains in forty. Singular as it may seem, all the large cities show a considerable decrease with the exception of Chicago, in which there was an increase of 6 per cent. The falling off in New York was 29 per cent, Boston 21, Philadelphia 25, Brooklyn 24, St. Louis 43, Buffalo 16, St. Paul 7, Baltimore 32, Washington 17, Indianapolis 24, Atlanta 83, Louisville 37, New Haven 46, Memphis 74, Salt Lake 18, Fort Wayne 32, Richmond, Va., 88, Savannah 11, Wilmington 34, Scranton 19, Fort Worth 31. The principal Pacific coast cities show material losses, including Los Angeles 43 per cent, San Francisco 34, Portland 33, San Diego 36, Sacramento 41, Berkeley, Cal., 29, Spokane 3, Pasadena 32, San Jose 42.

Notwithstanding the foregoing, there were some bright spots, including Chicago, with its gain of 6 per cent, Detroit 21, Cleveland 3, Kansas City 72, Minneapolis 11, Milwaukee 2, Toledo 114, Albany 113, Hartford 43, Columbus 32, Dallas 81, Seattle 23, Sioux City 129, Omaha 30, Peoria 92, San Antonio 24, Portland, Me., 87, Grand Rapids 14, Dayton 28, Paterson, N. J., 8, Duluth 18, New Orleans 11, Davenport 70, Springfield, Ill., 39, Stockton, Cal., 39.

As to the future, it is believed that while there may be little more contraction, there is no reason why there should be any material period of depression, for the reason that the substantial mercantile and industrial institutions are prospering as they have never prospered before the temporary contraction from which the country is now suffering, being confined to certain elements of the commercial life, which must find the cure within themselves.

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## ADVERTISING A RETAIL BUSINESS.

One of the most important departments in a retail business of any kind is the advertising department, and still, if you should ask every dealer in building material that you meet, this question: "Who has charge of your advertising department?" nine out of ten would say, "We have no such department," and they would be speaking the truth.

It is hard for any man to understand this, provided he has made a study of advertising, for advertising is one of the spokes in the wheel of success. If you should ask these same men the question: "Who has charge of your buying department, or your shipping department," you would have a ready answer, and in some cases the same man would have charge of all of those departments, but if you said advertising department to him he would more than likely give you one of the following answers: "We have no advertising department;" "We do not believe in advertising;" "We are so well known that we do not need advertising," or "We do not believe we could increase a demand by advertising." Most of these answers are not even truthful, but let us take them one by one and analyze them.

### We Have No Advertising Department.

This answer may be a true one, but the dealer that owns that he has no advertising department, after having said that he did the selling, and the buying, and the collecting, ought to be ashamed of himself, for an advertising department is of as much account as any of the others in the making of a successful business.

No man will come to you to trade unless he knows you are in the business, and telling people you are in the business is advertising, nothing more and nothing less.

One trouble is that lots of people have never taken the time to find out what the word "advertising" means. Some have a vague idea that it costs money, and that is enough for them to know about it. They don't care to look any further. Any man in business should have an advertising department, even if he is the only man in the business and is the head of each department.

### Do Not Believe in Advertising.

When a man says he does not believe in advertising he is not truthful, to say the least. I have heard people say that they did not believe in advertising and then flash expensive engraved letter heads on me and ask me how I liked them.

I have known a man to stop in the dictating of a letter, in which he was telling a man of a good trade he had for him, to say that he did not believe in advertising. I have known a good church man to tell me he did not believe in advertising when I knew that as a teacher of a Bible class in Sunday school he exploited his business by taking as many texts and examples from it as he did from his Bible.

We have had free schools in this country for many years, commencing in the East, and still we are told that there are more people in Massachusetts that can neither read nor write than in any other state in the Union, according to its population. Is is to be wondered at, then, that although we have schools to teach advertising all over our country, and that we can see millionaires all about us made so by advertising, we should find business men who can look you in the eye and say: "I do not believe in advertising."

### We Are So Well Known.

This reason is the limit. "We are so well known," and it is only half of a jest when someone says the fellow from the eastern shore, or the chap from the Knobs, of Tennessee, hasn't found out yet that the war is over, and there are people living in the United States today who do not know whether Roosevelt is an ex-president or a new brand of breakfast food. The Grand Canyon of the Colorado is one of the most magnificent specimens of God's handiwork. Some think it is the grandest piece of scenery in the world, but it is safe to say that there is not one person in twenty in the whole United States who can tell what state

it is in. All this, and yet some dealer, because he lives in a small town, or because he has a larger business than his neighbor, thinks he is so well known that he does not need advertising.

If you were asked which is the best known company doing business in the United States, you would most likely say the United States Steel Corporation, or the Standard Oil Company, and you would not go far down the list before you would think of the Bell Telephone Company, and you most likely think that the Bell Telephone Company needs no advertising. And when you come to think of it, is there a company in this whole country better known than the Bell Telephone Company?

Did it ever occur to you that you seldom pick up a magazine or paper but what you find their advertisement in it. I wonder why. Let those who think they are so well known answer. There is another reason given at times for not advertising. It is this:

**More Business Than I Can Attend To.**

Sometimes this is a base fabrication, and at all times it is rot. Especially when one hears from the same man that prices are low and that he has more business than he knows what to do with in almost the same breath.

A little common sense should teach a man that if prices are low, and he has more orders than he knows what to do with, he should get busy on prices, and advertise for more orders so he may have more chances of raising the price. If your coffee is too strong hot water will remedy it, but if you have no coffee you must get out and hustle.

The price of any commodity is never raised unless the demand is strong, and many a manufacturer has been found selling an article for less than he might have gotten for it because he did not know of an increasing demand.

**Advertising Creates Demand.**

One fact that is hard to make some retailers of building material believe is that advertising building material will create a demand, just the same as advertising a patent medicine will make people feel that they need that particular medicine.

Did you ever notice the advertisement of a real estate agent who was advertising to sell a new house? He does not say in his advertisement, "Come, all you people who have finally decided to buy a house," but he starts his advertisement something like this: "Why pay rent when you can own your own home?" He is simply creating a demand for the house he has built.

If a man can create a demand for houses, is it not possible to create a demand for the material to build the house? There is another proof, if one is necessary, why advertising creates a demand. It is shown in the fact that a fence may be built of cement, wire, lumber, brick, iron or stone. It is the same with the building of a house, a garage or stable. Then why not advocate the use of the material you have for sale?

Perhaps the next question to be considered is how to advertise, but that would take several articles, and then some, for advertising is both a science and an art, and needs to be treated from several viewpoints.

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The Taber Company, Keokuk, Iowa; capital stock, $50,000. To deal in building materials and merchandise. B. C. Taber, president.

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Miller & Banker, Chicago, Ill., has been incorporated; $10,000; wood, coal, ice, and building material. Parker H. Hoag, Frederic Ullman, Jr.; A. E. Goodman.

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The Euclid Builders' Supply Company, Cleveland, O., $10,000; B. A. Sage, R. A. Wilbur, C. S. Wachnes, H. H. Burton and A. D. Howe.

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Southwestern Compo-Granite Company of El Paso, Texas; capital stock, $5,000. Incorporators: Otis E. Carter, J. S. Turner, J. R. McLeod and others.

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Wm. T. Hookey Sons Co., Inc., Manhattan.—Manufacture and deal in building materials; capital, $25,000. Incorporators: A. H. White, Passaic, N. J.; T. F. Keenan, W. T. Hookey, Jr., New York City.

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Chas. G. Wise, dealer in building materials, at the foot of East Seventy-ninth street, New York, N. Y., has filed a petition in bankruptcy, with liabilities of $12,837 and assets $9,700, consisting of stock, $2,273; accounts, $5559; office fixtures, $100; horses and trucks, $1,080; sheds, $500; cash, $138, and note, $50. The business was started 34 years ago, and he has carried it on alone since December 1, 1911.

# CEMENT

**ASSOCIATION OF AMERICAN PORTLAND CEMENT MANUFACTURERS.**

(Meets Semi-Annually.)

**Officers.**

President—John B. Lober.
Vice-President—Robert S. Sinclair.
Treasurer—W. H. Harding.
Assistant Treasurer—W. D. Lober.
Secretary—Percy H. Wilson.
Assistant Secretary—Lewis R. Ferguson.

**Executive Committee.**

A. H. Craney, Jr., T. Henry Dumary, Edward M. Hagar, Richard Hardy, R. W. Kelley, R. W. Lesley, D. McCool, W. S. Mallory, John A. Miller, John R. Morron, L. T. Sunderland, Frank E. Tyler.

## WILL RETURN TO PHILADELPHIA.

"At the regular meeting of the board of directors of the Security Cement & Lime Company, November 10, 1913, the resignation of Harry B. Warner as secretary and general sales manager, was presented, to take effect December 31, and accepted.

"The board of directors, collectively and individually, expressed sincere regret at the decision of Mr.

HARRY B. WARNER, PHILADELPHIA, PA.

Warner to return to Philadelphia on January 1, where he will open an office as a manufacturers' representative.

"John K. Barbour, formerly Pittsburgh district manager of the Security Cement & Lime Company, has been appointed general sales manager in Mr. Warner's stead."

This is the text of a circular notice sent out by the Security Cement & Lime Company from its main office in Hagerstown, Md., and we are further advised that H. B. Warner, will, on January 1, 1914, open an office in Philadelphia to act as manufacturers' representative to handle the sale of cement, lime, plaster and other staple materials in the territory contiguous to Philadelphia city.

Mr. Warner, although a young man in years, is one of the cement patriots, having been identified with the first expansion of Portland cement interests in this country. He has always considered Philadelphia to be his home and in making this move is carrying out long considered and well matured plans. He has all the gifts of sales management and has always succeeded, no matter how difficult the problems, to market the product successfully that came within his scope of action. Without doubt, his new venture as manufacturers' representative in the great Philadelphia market will be a repetition of his former successes. He is an indefatigable worker and a far-sighted manager, which has been the mainstay of his successful activity in the sale of cement and other products.

Such high grade concerns as are looking for efficient, trustworthy and profitable representation in the Philadelphia district will do well to get in touch with Mr. Warner at once, for he is the type of man who will "hook up" only with the best class of producers and is loyal to a faultless degree in every business connection when once he has formed an alliance.

## CEMENT BUSINESS LOOKS UP.

**Removal of Duty Increases Galveston Market.**

Galveston, Texas, Nov. 18.—Since the removal of the duty of 8 cents per 100 pounds on cements, under the old tariff regulations, Galveston is preparing to handle large quantities of cement which will probably be brought into Galveston for shipment to interior points. Galveston is accustomed to the handling of vast quantities of cements, for in the building of the great Causeway 81,500 barrels of cement were used, and 28,500 barrels of the product were consumed in the building of the seawall. Numerous public buildings and residences have been constructed of concrete, but all this cement was imported for local consumption.

Other cities of Texas and the South are creating a large demand for cement in the construction of business buildings and residences, and the location of Galveston makes this port the logical point of importation, involving, as it does, low water and rail rates, the latter available because of the almost level haul from the Gulf to the South and Middle West. Cement sales agents in Galveston anticipate a remarkable increase of business since cement has been placed on the free list, and are making arrangements for the booking of large and fast ships to carry full cargoes of the product into Galveston.

## OUTLOOK FOR WESTERN STATES PORTLAND CEMENT COMPANY FAVORABLE.

At the ninth annual meeting of the stockholders of the Western States Portland Cement Company held recently at Independence, Kansas, it was shown that the company's business during the past year had been successful. The financial statement was approved by the stockholders and showed a net profit. On this basis the company will enhance its production by improvements at the mill, anticipating an extensive business for next year. The following board of directors was elected: A. W. Shultis, Independence, Kan.; John W. Boardman, Jackson, Mich.; A. J. Eisenmayer, Springfield, Mo.; Thos. Page, Topeka, Kan.; A. C. Stich, Independence, Kan.; John I. Senior, Jackson, Mich.; W. Bromelsick, Lawrence, Kan.; J. L. Bowdish, Wichita, Kan.; Thos. H. Dinsmore, New York City; B. F. Henry, Olathe, Kan.; C. E. Andrews, Boonville, Kan.

## RECEIVES LARGE ORDER.

Prescott, Ariz., Nov. 18.—The Arizona Land & Irrigation Company has just given a contract to the Southwestern Portland Cement Company for 60,000 barrels of cement for use in constructing its big dam near this place. The contract is said to be the largest cement order ever given in Arizona. The cement when shipped will fill 300 freight cars and will weigh 24,000,000 pounds. The company will probably use an additional 40,000 barrels before the dam is completed, a total of 100,000 barrels of cement being the estimated amount required in the structure. The reservoir back of the dam will be used to irrigate 10,000 acres of land.

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Plans for reinforced concrete building, three stories, 60x100 feet, have been drawn for the Sip Bottling Co., at Memphis. It will be located at 656 Madison avenue and will cost $40,000.

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Slayden and McNabb, concrete contractors of Waverly, Tenn., have completed a dormitory for the Industrial Training School at Huntington, Tenn., costing $6,000.

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**The annual meeting of the stockholders of the Dexter Portland Cement Company, of Nazareth, Pa., was recently held at that place and the directors were re-elected.**

# CHICAGO—AND THE CEMENT INDUSTRY

## Commercial Relationship a Big Factor to the City's Business World; In Production, Consumption and Distribution.

The past month has shown some evidence of the usual "fall season" inactivity in movements of building materials. However, the market is not exceptionally dull, and with continued good weather conditions during the next four weeks the year's trade will show a favorable, if not a remarkable, volume in every line of products.

A most important event to the local building supply interests was the reading of the Association of Commerce report on the cement industry. This report was prepared by the cement section of subdivision 52 (building material) of the organization, and presented at the weekly meeting on November 12. This report covers a broad scope of interest in the industry as related to Chicago's commercial activities in building supply resources. The report was prepared by Blaine S. Smith, and approved by the committee, consisting of Wm. P. Varney, chairman, S. S. Jenkins, Edward K. Cormack, W. T. Chollar and Walter S. Primley.

### The Committee's Report.

The manufacture of Portland cement is one of the youngest of America's great industries.

Its development has approached the spectacular and its future growth is certain. With this development Chicago and its great industrial zone has been prominently identified, both as a consuming and a producing center.

Portland cement as it is now known was probably first produced in 1836 in England and obtained its name, contrary to the usual supposition, from the fact that concrete made from the early product resembled in color and texture the stone quarried on the Isle of Portland.

In 1872 it was first produced in this country and showed a slow, steady growth up to 1895. In that year coincident with marked improvements in manufacturing methods the industry attracted capital by the very encouraging return its future promised and thenceforth its development has been rapid and, in fact, remarkable. In 1900 the country's production was about 8,000,000 barrels, which in 1910 had increased to over 76,000,000 barrels. This year it is estimated that the total will reach 90,000,000, which will be about the equivalent of one barrel per capita of population.

By converting this tonnage into other measures than barrels a better conception of its magnitude will perhaps be gained. Hence, let it be known that the 1913 output of 90,000,000 barrels would fill 529,000 freight cars of thirty-ton capacity, which, if consolidated into one train, would reach from Portland, Maine, to San Francisco, and from San Francisco to Los Angeles. Also, if the 360 million sacks of ninety-five pounds each were set end to end, they would encircle the earth six times.

From another angle: These 90,000,000 barrels would build three concrete highways sixteen feet wide east and west, and six concrete highways north and south through the United States, and would besides build a concrete road of the same width from Dawson, Alaska, to Cape Horn via Buenos Aires; or they would construct a concrete wall twenty feet high and ten feet wide which would completely enclose the states of Iowa, Missouri, Illinois and Indiana.

Portland cement has a diversity of uses and enters the composition of some 453 different articles and types of construction. While its principal and most common use is in large work such as street and highway pavements, canals, docks, piers, wharves, tunnels, buildings, bridges, retaining walls and the like, the fact should not be overlooked that at this stage of its development its use in drain tile is as successful as in bridges, and that it is used with as much ease in statues and other ornamental work as in canals, with as complete satisfaction in garden furniture as in warehouses, with as much facility in laundry tubs as in street pavements, and to as great advantage in hens' nests as in silos.

A place of immense consumption little appreciated is the farm. The six and three-quarter millions farms in the country consumed last year, it is thought, no less than 15,000,000 barrels.

As the importance of the pig iron business is a matter of more popular knowledge, a better conception of the general industrial importance of the cement industry may perhaps be gained by stating that, judged by the standards of annual output in tons, productive capacity, and actual capital employed, the cement business is fully one-half as large and one-half as important as the pig iron industry of this country, and in capital employed it outranks the copper mining and refining business, and the entire gold mining industry of the United States and Alaska.

The manufacture of Portland cement requires a very heavy investment in plants and machinery. This is noted in the fact that $180,000,000 is the approximate real investment in plants which will turn out 90,000,000 barrels this year, the equivalent of $2.00 per barrel of yearly production.

Besides, remarkable as has been the rate of growth of pig iron production, that rate of increase has been more than surpassed by cement manufacture. And, at this juncture, it is interesting to observe that despite panics and periods of business depression, cement production has never failed to show an annual gain.

In the early stages of cement manufacture in this country, the foreign makes were considered of superior quality and imports were heavy.

The price of Portland cement has since 1897 been practically cut in half, yet the grade of the American product has gradually improved and in its manufacture today the most exacting supervision is exercised, and it is subject to unusually strict and rigid tests.

It is at present, and has been for a number of years, freely conceded that this country is turning out the best Portland cement to be found in the world.

This is reflected in the decrease in imports from three million barrels in 1895 to 68,000 barrels in 1912. At this point it may be interesting to observe that exports from this country in 1912 totaled four and one-fourth million barrels.

Thus it is seen that in the short space of ten years the cement industry has jumped from an inconspicuous and unimportant position to high rank in the country's industries, and its soundness and stability are now of vast interest to the nation commercially and financially.

The growth in volume or importance of any article or proposition is in the final analysis based upon merit and adaptability. Yet the rate of growth is oftimes largely dependent upon education and promotion. There is, perhaps, no business whose rate of growth can be more directly traced or has been so greatly resultant from educational work than the Portland cement industry. A well conceived and actively and wisely executed campaign of education has, for a number of years, been conducted by the Cement Manufacturers' Association and by some of the larger cement producers, and the returns have been abundantly productive in increased consumption. This has been accomplished by the formation of associations of various branches of cement consumers where have been thoroughly discussed general and technical questions relating to the use of cement.

By the holding of large and frequent exhibitions of cement and products in which cement is used, and of cement making and consuming machinery of all descriptions.

By the reading of papers on, and discussion of the various phases of the industry before engineering, chemical, and other technical societies.

By the publication and distribution of tons of literature of an educational nature concerning practically every kind of construction work to which cement is adapted.

And by the formation of educational bureaus which by lecture and correspondence have advised and answered inquiries from the cement user, be he the large contractor or the small farm consumer, upon every phase of cement construction.

It is worthy of note that this work is entirely educational and may well be contrasted with the custom in many other lines of business of spending vast sums of money in mere advertising. In the one case the work is creative; in the other simply competition.

Many of these pamphlets are so worthy that they have been adopted as text books by universities and agricultural colleges.

A pointed example of the efficacy of this method of increasing consumption is shown in the case of concrete roads and streets which in 1912 consumed 1,750,000 barrels. By promotion and education consumption in this field has been increased to approximately 4,200,000 barrels this year.

In the Chicago industrial zone there is produced annually about eight and one-half million barrels or nearly 10 per cent of the country's total. As a consuming center, too, Chicago occupies a conspicuous position. The value of Chicago's annual building operations is exceeded by no city in the country save New York, and were we to compare the Chicago industrial district with the eastern metropolis, it is likely that Chicago would outrank her.

That progressiveness which has made Chicago great in almost every particular by which a city's supremacy is gauged, is shown in the fact that she was a pioneer in the use of cement, and is today a leader in its use in unique and advanced forms. In Chicago was held the first cement show, which has become a permanent institution, and the Seventh Annual Exhibition will take place here the coming February. The cement show brings thousands of visitors to the great central market, and their large expenditures contribute substantially to the city's prosperity.

A reform has been accomplished in the cement business in regard to freight car efficiency which, though perhaps a bit foreign to a report on the industry itself, is nevertheless deemed worthy of mention.

Car shortage is of great inconvenience and of inestimable financial loss to the country's commercial interests.

It must be admitted that it is unreasonable, at least under present conditions, to expect the railroads to provide freight equipment to carry the maximum traffic moving in three months of the year because a large part of the investment would be idle during the remaining nine light traffic months. Hence, it is incumbent on the shippers of the country to make every reasonable effort to increase the efficiency of the cars available.

One certain and effective way of accomplishing this is by loading freight cars to their full carrying capacity. Efforts to do this have, in the cement business, been very successful and the results noteworthy. It had been the custom to think in round numbers such as 100, 150 or 200 barrels, and customers ordered carloads of these amounts. The carrying capacity of a

50,000-pound capacity car is 144 barrels
60,000-pound capacity car is 173 barrels
80,000-pound capacity car is 231 barrels
100,000-pound capacity car is 289 barrels.

It will be seen that to ship 150 barrels required a 60,000-pound car with consequent wasted capacity of 23 barrels. To ship 200 barrels required an 80,000-pound car with the resultant loss of 31 barrels capacity, and so on.

The remedy was to educate the trade to cease thinking in round numbers—in multiples of ten—and instead to order 173, 231, and 289 barrels, the exact full carrying capacity of the cars. At first this seemed awkward and was regarded as revolutionary. Habits of long standing are hard to break. Soon the reasonableness of the plan became recognized and support was hearty. The results in the case of one cement producer are indicative. In 1911 the average load per car shipped by that company was 67,640 pounds; in 1912, 70,300 pounds; after the first eight months of 1913, 73,606 pounds.

This increase of about 3,000 pounds per car, per year, may not on its face seem important. Had this increase not occurred, however, it would have required 2,132 cars more to accommodate the number of barrels shipped in that year. Figuring on the same basis the saving for the first eight months of this year is 3,307 cars as compared to the 1911 record, and 1,758 cars as compared with the improved record of 1912. In other words, by increasing the efficiency of the cars loaded by raising the average load per car, that company alone was able to release over 2,000 cars per year for the use of other shippers. If this same record of efficiency were shown by every shipper the car supply would be sufficient and the commerce of the country could and would move to market promptly and where it was wanted with a saving of millions of dollars annually. This simple conservation movement is worthy of emulation by every Chicago shipper of carload freight.

### CAPITALIZATION OF BONNER CEMENT COMPANY INCREASED.

On completion of enlargements and improvements made during the past year by the Bonner Portland Cement Company, Bonner Springs, Kansas, the capital stock was increased to $100,000 and this whole amount subscribed on October 5th. The official report of the directors of the company showed to the shareholders that the earnings of the mill during the past five months had been $40,000. At the annual meeting the company's directorship was re-elected.

## THE RUSSIAN CEMENT INDUSTRY.

### Market Condition of the Present Is a Favorable Result Brought About After Years of Commercial Adversity in the Industry.

(By Our Own Correspondent.)

Very dramatic indeed has been the history of the Russian cement trade during the last decade. From 1903 to 1910 the industry suffered from the effects of a heavy crisis, which was followed by a big boom lasting up to the present time. In the first period the industry was affected by permanent overproduction, in the second period the market suffered from chronic under-production. The growth of the cement supply did not correspond to the quickly increasing demand. This position gave rise to the much-discussed question of a "cement famine." To stimulate the production of cement, to create new cement undertakings, and to enable the industry to fulfil its duty towards the consumer is the tendency of the moment.

Until 1910 the state was the chief consumer of cement, being the constructor and controller of the railways. During the years 1890-1900, characterized by a railway construction boom, the state created a great cement consumption and was practically the only consumer of cement of importance. The consequence, as a writer in the London "Times" points out, was that when the "railway fever" passed away, the consumption fell off and the cement mills were left in a difficult position.

The position was altered only a few years ago. The two very good harvests of 1909 and 1910, together with a general rise of the agricultural and industrial activities of the Russian people, opened up new sources of cement consumption which are daily gaining in importance. The increasing use of cement in house building is also a favorable factor. Fires yearly destroy a great number of peasant houses (wooden buildings), and in the great towns the population is not provided with sufficient house accommodation. Since 1910 building and rebuilding work is being done all over Russia, and cement is much used in this construction process. A new market for cement, particularly for the better qualities, has been created, and appears to be a fairly steady one. At the same time many new railways are in construction, many more are planned; canal works, municipal, especially Zemstvo, undertakings are taken in hand. The demand for cement is guaranteed for a series of years on a very high scale.

The first cement mill was started in 1851. Up to 1885 no more than seven mills were producing cement in Russia. During the following 15 years 27 new mills were opened. The production went on increasing from about 400,000 tons in 1898 to 700,000 tons in 1903. The following critical years showed a production of 500,000 to 700,000 tons. Since 1910 the cement production has grown very fast. In 1910 it was 1.4 million tons, in 1911 1.5 millions, and in 1912 over two millions, and this year it is expected to show an increase of half a million tons or more. Russia is producing now over four times more cement than she did four years ago. Still more important is the fact that the expansion of the industry is only in its beginnings, and the outlook is highly favorable. The figures of imports of foreign cement prove this statement. In spite of the growth of Russian cement production, Russia is increasing her imports from Sweden and Denmark, the figures being 16,000 tons in 1909, 55,000 tons in 1910, 150,000 tons in 1911, and 200,000 tons in 1912.

The Russian cement industry is divided into two sections. Natural cement is produced in the south, artificial cement principally in the Novgorod province and in the Volga district. The natural cement industry is concentrated in the Black Sea province, more particularly in Novorosiyssk. The resources of cement in the south of Russia are very great. There is a cement formation running from the Black Sea right into the Kuban province. The production of natural cement constituted in 1897-1906 37.5 per cent of the total cement production of Russia. But since that date interest has been shown in the development of the artificial cement industry. A number of cement mills have been started in the Novgorod province at Tchudovo; several mills were opened in the Baltic provinces, and some more on the Volga. Artificial cement is produced at a higher cost, but the high prices ruling on the Russian cement market have made its production profitable. Besides, the growing demand for a better quality necessitated great technical improvements, and the new mills have lately made a complete change in their working methods. Good Portland cement in largely increased quantities can be produced by the Russian mills at present.

The crisis of the cement industry in 1903 and the six following years induced the mill owners to combine for the sake of regulating the production and the sale of the cement. Through this method many mill owners were saved from bankruptcy, and the position of others was bettered. On the other hand, the industry was hindered from extending the production of cement, and when the industrial boom increased the demand for cement the policy of the owners' combinations led to a continuous rise of cement prices, to a limited progress of production, and to the so-called "cement famine."

This unnatural position was partly resolved last year by the advent of many outsiders, who were not inclined to submit to the committee's regulations and consequently broke the cement owners' combination. The mill owners then engaged in keen competition with each other, but, thanks to the very satisfactory position of the market, the competition has taken the form of enlarged output and improved management. Prices are up to the present unaffected by the dissolution of the "Syndicate;" on the contrary they are still rising, and in many cases reach R.8 per 10 poods (about $25 per ton), while the average cost of production is about R.2.5 (about $7.50 per ton).

Everything in the Russian cement industry shows signs of favorable development, and there is much more confidence at present than during the boom 15 years ago. Shares of cement companies have risen considerably during the last year, and are still rising; there is no fear of a decline in the demand for at least five years to come. The Finnish market, which is at the present time controlled by the German, Swedish, and Danish cement producers, may be opened and won by the Russian cement industry.

## CRISIS IN THE GERMAN CEMENT INDUSTRY.

(Consul Talbot J. Albert, Brunswick.)

The administration of the Rhine-Westphalia Cement Syndicate (Verwaltung des Rheinisch-Westfälischen Cement-Syndikats) at Bochum has notified the cement factories and cement unions in Germany that, in consequence of the refusal of a number of works to prolong during the year 1914 the agreement regulating and fixing prices, the sales of cement will be free from limitation for the coming year. In order to reduce competition among themselves, 14 Westphalian cement works which belonged to the syndicate have formed a combination to be known as the Union of Westphalian Portland Cement Works. At the meeting of the syndicate held September 29, 1913, it is reported that the proposition to fix the maximum sale price at 150 marks ($35.70) per 10 tons (2,240 American pounds each) was voted down, as also the motion to suspend sales until November 1, 1913. The statement at a meeting of the Holland Syndicate, September 30, 1913, that a number of Belgian cement factories, contrary to agreement, had made advance sales, has brought up the possibility that this syndicate also may find it necessary to dissolve.

### Fall in Cement Prices.

The impending dissolution of the German syndicate has caused a rapid fall in the price of cement. The railroad administration at Hanover lately made proposals for the delivery of 17,000,000 kilos (16,731 long tons) of Portland cement. Bids were received from 13 companies, varying between 13 and 16 cents per 100 pounds—half or less than half of the hitherto prevailing prices.

It is not impossible that the increased use of electrical power, which greatly augments the productive capacity of the factories, may have been a contributing factor in the present crisis.

## MEMPHIS CEMENT NOTES.

Memphis, Tenn., Nov. 18.—Cement business here holds up very well, though the general run of trade is a little slack, owing to fewer small buildings being erected this season. Walks, culvert work and re-enforced work are on a good scale in local territory. Sand and lime are about normal.

The Memphis Granolith Co. report work on cement porch columns, steps and specialties a little quiet at this season, but they are having big success with their cement burial vault. Mr. McDaniel, the inventor of this, has installed the same at all of the leading cemeteries here and it has given very general success.

The new mill of the Arizona Cement Company near Phoenix, Ariz., is now in steady operation, and its product is finding a good sale in that vicinity. As a result of the entrance of this mill into the field, the price at Phoenix has dropped to about $2 per barrel, compared with a price of $4.40 in some other parts of the state.

## CEMENT CONDITIONS IN PHILADELPHIA.

### Elimination of Tariff Duty Establishes Foreign Competition—Lehigh Valley Plant to Seek Rate Reductions.

Philadelphia, Pa., Nov. 20.—The placing of cement on the free list, which strikes off the Payne-Aldrich bill duty of 32 cents per barrel, is generally expected to cut into the business of the domestic producers of this vicinity, yet the industry is able to lay down cement in Philadelphia 20 cents a barrel less than the cost of Belgium cement delivered here. While cement shipped from the United States to Canada pays 52 cents in Canadian duty, cement from the Dominion comes in free and on this account can be delivered in Buffalo at a freight cost of 90 cents a ton, via Lake Ontario points. The freight rate per ton from the Lehigh Valley to Buffalo is about $1 more.

Lehigh Valley cement interests declare that Philadelphia is not being treated fairly by the railroads in the matter of rates. It is stated that the rate to Philadelphia, a distance of 70 miles, is 1.7 cents per ton per mile, while to Buffalo, a distance of 359 miles, the rate is 53-100 of a cent per mile. It is generally anticipated that the matter will be brought to the attention of the Interstate Commerce Commission, with a view to having the rates to these two cities put on a more equal basis.

The Belgium products costs $1.34 a barrel on the local dock. American Portland cement is shipped from Lehigh Valley quarries in bags, four bags to the barrel, at a cost of 90 cents per barrel, and as the cost of bags 40 cents and 24 cents cost of barrel freight must be added, the total cost is brought up to $1.54. The consignee, however, is allowed a rebate of 10 cents for each bag returned, freight prepaid, which brings the ultimate cost down to $1.14, or 20 cents a barrel less than the quotation on Belgium cement.

American Portland cement will comply with the specifications of the United States Bureau of Standards, which was adopted by the Government in all branches, under an executional order by President Taft, and with the required specifications of the American Society for Testing Materials. In speaking of the qualities of the Belgium product, one of the best informed in Philadelphia on cement, says the Belgium product will not comply with these specifications, but that it will comply with the specifications for natural cement.

## OKLAHOMA COMPANY EXHIBITS MINIATURE FARM BUILDINGS.

The Oklahoma Portland Cement Co., Ada, Okla., had a splendid exhibit at the soil products exposition held in Tulsa recently. The exhibit of the firm was in the form of a miniature farm and showed strikingly how cement may be utilized for all manner of farm buildings. The exhibit was in charge of P. O. Cullins, manager of the company. The Oklahoma Portland Cement Co. is purely Oklahoman. It has been in operation for seven years and has built up a large business. It now has 29 employes and puts up 2,750 bags of Portland cement a day. The yearly business is about 7,175 car loads.

## BIEGLER WATERPROOFING SUCCESSFUL.

E. N. Biegler, Inc., of Chicago, specializing in the manufacture of waterproof, damp and alkali resisting products and other building specialties, has met with exceptional success during the past year. Biegler's Dampproof Coating for foundation walls is a product which has been used in Chicago building construction with noteworthy efficiency, and is included in many of the new and important buildings. Another Biegler product which comes in for its measure of success is a Dampproof Coating used in place of furring and lath. It is pointed out that the plan of using this product is absolutely fireproof construction and a saving advantage of 1½ inches space on each wall. Further, that it being windproof reduces the heat radiation. Also that it forms a perfect bond between the plaster and the wall proper, resisting alkali, damp and saltpetre. Mr. Biegler and his associates have made a thorough study of the waterproofing department of building material products during the past 20 years, with the result that they have enjoyed success and prosperity based on practical knowledge. Their factory at 2730 Rockwell street is at all times producing the capacity output. In a recent interview Mr. Biegler stated that they are anticipating the erection of a new plant in the near future, plans for which have already been prepared.

# LIME

**THE NATIONAL LIME MANUFACTURERS' ASSOCIATION.**

(Meets Semi-Annually.)

**Officers.**

President—Wm. E. Carson, Riverton, Va.
First Vice-President—J. King McLanahan, Hollidaysburg, Pa.
Second Vice-President—Lowell M. Palmer, Jr., New York, N. Y.
Third Vice-President—Geo. E. Nicholson, Manistique, Mich.
Secretary—Fred K. Irvine, Chicago, Ill.
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**Executive Committee.**

Wm. E. Carson, Chas. Warner, L. Hitchcock, W. M. Hunkins.

## LOUISVILLE LIME NEWS.

**Market Fairly Active—Interest Recently Manifested in Utility of Agricultural Lime by Farmers—Concord Lime Works Plant Will Be Rebuilt.**

Louisville, Ky., November 18.—The demand for lime has been very active lately, according to J. B. Speed & Co., and the operation of two of the company's three plants at Milltown, Ind., has been necessary to supply the call for this product. The steel and strawboard people are using it in large quantities, and this has made the demand fairly good, in spite of the slowness of the building trades.

A demonstration of the use of lime as a remedy for certain soil deficiencies common in this section was recently made on the farm of W. H. Newman, near Louisville, by Nat T. Frame, a government farm expert, in the presence of a large and interested gathering of farmers. Mr. Frame showed how to prepare and apply different kinds of lime for the purpose indicated, and answered numerous questions indicating deep interest in the matter on the part of those present. An exhibit at the Kentucky State Fair by the Kentucky agricultural department showed the good results obtained by the proper use of lime, and the farmers in this section are waking up on this subject.

The Concord Lime Works, at Concord, Tenn., will probably be rebuilt, according to Ben Jones, owner of the plant, which was recently destroyed by fire. The loss was between $3,000 and $5,000, and the new buildings to be erected, measuring respectively 40 by 90 feet and 50 by 100 feet, with their equipment, will probably call for an expenditure of at least the larger sum mentioned.

## WILL BURN LIME WITH COAL GAS.

Delay in steel work has prevented the completion of the Standard Lime and Stone Company's new gas producing plant at Knowles, Wis. The plant has been in operation for the past two months, but the platforms and steel exterior work, such as roofs, etc., remain to be done. The contract for this work is held by the Vulcan Manufacturing Company, of Fond Du Lac.

At the present time the company is operating but one kiln and is producing about 325 barrels of lime every twenty-four hours, while under the wood burning system the maximum production per kiln was about 175 barrels. At the same time the cost of production has been reduced from 16 cents a barrel over a wood fire to 7 cents a barrel over the gas flame.

Increase in the price of cordwood at the hands of choppers, difficulties with the railroad company in delivering wood from the northern timber sections, and the shrinkage of consignments, all contributed their share toward the improvement of the gas method of burning lime over that of burning wood. With wood burning methods lime manufacturers were forced to keep from 10 to 14 carloads on hand to keep their plants running. With the gas system one carload of coal is all that is needed to insure continuous operation of the plants.

The Standard Lime and Stone Company's plant at Knowles, Wis., is the third of its kind to be installed in the United States, the others being at Riverton, Va., and Glencoe, Mo. The plant at Knowles is built under Schmatolla patents.

## DEATH OF CHARLES C. BISHOP.

It is with heartfelt regret that we record the death of Charles C. Bishop, of Chicago, long a member of one of the most important lime concerns in the country. Death came as a result of heart failure at his quarters in the Hotel Majestic, November 17th, where he had made his home for a number of years, he being a bachelor. Mr. Bishop was one of nature's noblemen, an unpolished gem, exclusive in his tendencies and habits, but big-hearted, one who loved and appreciated his friends and who received the full measure of their confidence and respect in return.

For 25 years Mr. Bishop had been connected with the Marblehead Lime Company, whose general offices are located in the Masonic Temple building, Chicago, and was intimately associated with A. T. Howe, president of the company, and Douglas Howe, in conducting the business of the big concern. Here Mr. Bishop met most of his business associates and they for the most part were his companions and chosen friends.

THE LATE CHAS. C. BISHOP.

He was born in the city of New York in 1845 and when a small child emigrated with his parents to Janesville, Wis., where he grew up to manhood and began his business career. In fact, he always considered Janesville as his home, for he was never married and his mind always harked back to the fireside of his parents in Wisconsin. He came to Chicago in 1867 and went into the lime business in company with a man by the name of Scace, under the style of Scace & Bishop, retail lime merchants, and it was said of this concern that it was the only successful lime merchandising institution that ever succeeded in building up a profitable business. This was largely through the efforts of Charlie Bishop, who built and looked after the lime boxes of the firm wherever the customers were using them, and also attended to the collection end of the firm's business during that unsettled period of the first expansion of Chicago into a great city.

For more than 20 years Mr. Bishop had been secretary and treasurer of the Marblehead Lime Company and his services were always highly appreciated and esteemed by his business associates on account of his qualities as a practical economist. He was an indefatigable worker and, except for his business trips to the various plants of the company located in Illinois and Missouri and to the Kansas City office, he was never absent from his desk until the last few months, when he had been on the sick list more or less from the early spring.

Mr. Bishop was a member of Hesperia Lodge, A. F. & A. M., a 32d degree Mason and Shriner. He was a remarkable Bible student and a man whose charities were numberless, although he never made any list of his charitable expenditures. He was a charter member of the Illinois Athletic Club and lived the easy life of the well-to-do, contented bachelor, with a hotel for his fixed habitat.

By request of Mr. Bishop his funeral arrangements were made by his Masonic lodge and the remains were conveyed to Janesville, Wis., and buried with Masonic ceremonies November 18, in the family lot in the Janesville cemetery.

In the passing of Charlie Bishop we voice the sentiment of his friends and companions when we say that we feel we have lost a steadfast friend, the world an admirable man, the community an enterprising citizen, and the concern of which he was a member, an able and efficient officer.

## PITTSBURGH LIME NEWS.

Pittsburgh, Pa., Nov. 11.—Lime companies have had a very busy year. The trade in agricultural lime was the best ever. Farmers this fall bought probably 25 per cent more agricultural lime than ever before and in Ohio it is said that fully one-third more was purchased than last year. The trade in mineral lime has been very promising and demand has held up well. There is at present considerable business in this line being done in connection with the big building projects now going on in Pittsburgh. Retailers here have been pretty good buyers of lime all the year. The plants in the New Castle district north of Pittsburgh have had a very successful season and are running nearly full capacity now. In the Ohio field nearly all lime companies report the best year in their history.

The National Mortar & Supply Company, from its offices in the Second National Bank building in this city, reports business first-class. It will run its plant at Gibsonburg, Ohio, all winter. Its new plant of fifteen kilns now being erected there will be ready for operation in January and will increase its capacity 150 tons a day. A. H. Lauman, president and general manager of the company, is spending much of his time in Gibsonburg, Ohio, this fall.

## PROMOTING NEW LIME PLANT.

Charlevoix, Mich., Nov. 18.—John Burns and E. S. Stacks of this city, with W. P. Porter of East Jordan, are promoting a lime plant, there being two of these enterprises now running in Charlevoix. Their factory will be located near the Charlevoix Rock Product Company. It has been estimated that there is enough lime rock here to furnish three plants with raw material for a century.

The Nevada Lime & Plaster Company has installed a lime quarry adjoining the right of way of the Salt Lake Railroad at Sloan, Nev., and now has a plant in operation, finding a ready market for its ouput. It is announced that three additional kilns will be installed.

# GAS FIRED LIME KILNS

## Economical Methods Applied to the Burning of Lime—How Present Waste May Be Turned Into Profit.

By W. C. Kirkpatrick, Consulting Engineer.

What a great dilemma many of us would be in if the lawmakers of our country would enact laws similar to those being contemplated in different portions of Europe, which makes it unlawful for anyone to attempt to burn or try to consume raw fuel. Did it ever occur to you, my dear reader, that the actual loss in mining, transporting and firing coal in the United States is over 97 per cent, and that we actually get less than 3 per cent efficiency of the coal in the mine? Conservation of natural resources means far more than any of us can comprehend, and sooner or later we Americans will also find it necessary to enact laws for the protection of our fuel supply.

Most of the manufacturers who consume large quantities of fuel are well aware of the tremendous loss, but for some almost unaccountable reason they continue to employ the old inefficient methods when modern tried-out methods can be applied, greatly reducing costs, saving fuel and labor. They know every ton of coal as consumed in the ordinary furnace, whether for power or heating, is not being consumed at a greater efficiency than 15 per cent. This would mean that if one pound of coal contained 12,000 heat units, they consume 1,800 and lose 10,200, or for every ton of coal consumed they would actually receive the total heating value of 300 pounds and lose 1,700 pounds of the ton, or receive the total heating value of only 3,600,000 heat units per ton of coal consumed, losing 20,600,000.

Every large coal consumer knows that coal contains large quantities of valuable by-products, and that each article of by-products has a tremendous market. It is a well-known fact that in one ton of ordinary bituminous coal, perhaps costing $3.50 per ton in Wisconsin, will produce on an average of 22,000 feet of 400 B. T. U. gas, 10 gallons of tar, 22 pounds of ammonium sulphate, 3 gallons of benzol and 1,500 pounds of coke.

Let us analyze this. In the ordinary firing, we only consume 3,600,000 heat units per ton of coal, losing the balance, and by adopting a simple by-product method we extract the volatile matter in the form of gas and hydrocarbons, and the gas at 50 per cent would generate 4,400,000 heat units, or 800,000 more than the whole ton in the ordinary method. After we have produced this gas we have approximately the following values from the same ton of coal:

| | |
|---|---|
| 1,500 pounds of coke @ $4 per ton | $3.00 |
| 22 pounds of ammonium sulphate @ 3c | .66 |
| 10 gallons of tar @ 3c | .30 |
| 3 gallons of benzol @ 10c | .30 |
| | $4.26 |

Thus we find that after the gas from the ton of coal has been extracted, which produces a greater heating value than the original ton, the by-products have a value equal to the original cost. The 1,500 pounds of coke can be sold for domestic purposes and is found to be absolutely smokeless; therefore a valuable product for the city trade. The tar can be sold for road or roof construction, also for firing boilers or other furnaces, and has a heating value of 20,000 B. T. U. per pound. The benzol has a heating value greater than gasoline and is used for power work. The ammonium sulphate is very valuable for fertilizer and is constantly increasing in price.

We find a similar waste in the burning of wood, and from the stump to the actual consumption of the heat produced we do not get 3 per cent efficiency, and in all woods we can distill, gasify and produce valuable by-products in the process by using modern tried-out methods, therefore conserving our natural resources, producing economical and efficient results.

### Burning of Lime.

It is a well-known fact that 95 per cent of the lime produced in the United States is by old-time methods, methods that I personally know have been employed for 35 years, and from observation it is safe to say it is the same method that was employed to burn the lime Noah used to plaster the ark. Of course, we know it can be burned very successfully the old way, producing good lime, but not at an economical price, and the methods employed are so crude that every farmer who has a limestone hill on his farm learns that he can build a kiln and burn lime at odd times and compete with the other fellow.

The farmer is doing well, making expenses at odd times, and as he puts in his own time he can afford to drop the price in order to sell his product, and he is therefore a dangerous competitor to the large producer; dangerous because he has no money invested in equipment, has no overhead expense and can actually make more net profit per barrel of lime than the large producer. His wood or fuel does not cost any more, his labor costs 25 per cent less, and as the large producer employs almost the same crude methods they are unable to meet the price of their small competitors and make a profit, and the total result is not only small profit but overproduction.

Overproduction and little or no profits eliminate the payment of dividends on money invested in the industry, and surely no one can blame the small producer for this condition. On the other hand, if the large producer—the firm making a business of producing lime and rock products—if they would employ modern methods in not only production but also organization they would greatly cut the cost of production and sales. Their profits could and would be increased at the same ratio to the production in the cost of production, and they could produce a better grade and more uniform product.

There can be no question about burning with modern methods, provided the manufacturers are careful in letting contracts for the installation of equipment required to produce economical results. Some manufacturers have tried burning lime with producer gas, resulting in more or less success, and we must all confess that those who have attempted this method, whether successful or not, are proceeding along the right lines, and that if they have failed in any way that it is purely a mechanical error and that by using good judgment they are bound to accomplish the desired results. The only possible failure that can be made by the use of producer gas is in the method of application. It is a well-known fact that we cannot run a direct current motor with alternating electric current, yet it is electricity, and just because it is electricity it is unreasonable to suppose it will work successfully on any kind of a motor.

So it is with producer gas. Just because it is producer gas and we know it works successfully in certain kinds of furnaces, applied in a certain way, we must not think it will work successfully, applied in the same way to all kinds of furnaces. In the production of lime we find that as the heat is applied to carbonate of lime, the lime gives up large quantities of carbonic gases which are very heavy and destructive, and if for any reason the temperature drops in the furnace below a certain degree, the heavy gases (carbonic gases) drops back, re-enters the lime and produces a bad effect and a poor quality of lime.

As these gases are very destructive, they smother the fuel gas, causing a great loss or inefficient results. Unless you apply the gas and air under pressure and valve control, you will find it hard to control the temperature, and unless you control the temperature, you fail to produce efficient results and a good quality of lime. We especially find this hard to control when they draw off lime, as at the time of making the draw large quantities of free air pass up through the bottom of the kiln and mixes with the gas in the combustion chamber.

This air is greatly in excess of the proper quantity for complete combustion of the quantity of gas as admitted, and as it is cold air it greatly reduces the temperature. But if the gas and air for combustion is applied under pressure, then when the "draw" is made you can automatically shut off the air at the burner and the air passing through the draw door will be consumed in the combustion of the fuel gas, thereby preventing a drop in the temperature and resulting in efficiency and a uniform production.

In the production of lime, or burning lime with wood, we consume approximately 40,000 cords in the production of 1,000,000 barrels, and as wood in Wisconsin costs on an average of $4 per cord, the fuel cost is found to be about 16 cents. One cord of wood as used will be found to have a heating value equal to about 4,800,000 heat units, or we find it requires approximately 192,000,000,000 heat units per 1,000,000 barrel production. Should we burn with gas, we would be required to generate sufficient gas to produce sufficient heat to displace that generated by wood.

By using ordinary cleaned producer gas as generated from 12,000 B. T. U. coal we would perhaps lose in generation, cleaning and the efficiency of the gas at the point of combustion approximately 40 per cent, or consuming the coal on a basis of 60 per cent efficiency, or 7,200 B. T. U. per pound. We therefore would consume approximately 13,337 tons of coal in the production of the producer gas required to generate the heat to displace that as generated with 40,000 cords of wood and to burn 1,000,000 barrels of lime.

With 12,000 B. T. U. coal selling for $3.80 f. o. b. cars, our fuel cost per barrel would be approximately 5 cents, but should the manufacturers as a whole install a gas and coal product generator designed for gasifying the volatile matter in the coal and producing in the process coke or smokeless coal and tar as a by-product, we would perhaps get the following results. Instead of using the higher grade coal we would use a clean slack worth perhaps $3 per ton f. o. b. cars, and as we would be gasifying only the volatile matter in the coal, we would consume approximately 25,000 tons as follows:

| | |
|---|---|
| 25,000 tons @ 22,000 ft. of gas | 550,000,000 ft. |
| 550,000,000 @ 350 B. T. U. | 192,500,000,000 B. T. U. |

or the total heat required to burn 1,000,000 barrels of lime.

In the production of the above gas we would also produce automatically:

| | |
|---|---|
| 18,750 tons of coke @ $3.80 | $71,250.00 |
| 250,000 gallons of tar @ 3c | 7,500.00 |
| Total by-products | $78,750.00 |

### Cost of Operation.

| | |
|---|---|
| 25,000 tons of slack @ $3 | $75,000.00 |
| Labor, 10c | 2,500.00 |
| Labor on tar, ½c | 1,250.00 |
| | $78,750.00 |

Therefore it will be seen that by adopting the by-product system, the gas required for burning is furnished free except for depreciation, interest on investment, etc., and on each 1,000,000 barrel production we would have a saving of over $100,000 by using producer gas and $160,000 by using the by-product gas.

Should the lime manufacturers as a whole adopt the by-product system or method it would result in the greatest economy, because of the fact that a contract could be made on a profitable basis for the disposal of all by-products to the company supplying the coal. The manufacturer would be gasifying and consuming that portion of the coal found objectionable to the general trade and especially the city and small town domestic trade.

As the by-product plant can be of small capacity, continuous and automatic, it will be inexpensive with low depreciation. The coal would be dumped into a track hopper and elevated mechanically into the bunker over the generator. The semi-coked coal or smokeless fuel passes through one chamber by gravity, and mechanically elevated over the track to a loading out bunker.

The manufacturers cannot hope to change the present inefficient methods unless they make an organized effort to work and solve the problem of economical production. It is too much for an individual to undertake. That is, an individual company should not be burdened with the expense when all manufacturers will be benefited by the result. Yet if the entire industry would employ competent men to make their industry a practical study, and to work out economical methods for them and to their interest direct; then, and only then, will the desired result be accomplished. And the cost of thoroughly testing, developing and working out a practical plan of operation which no one could question would be paid pro rata and each company would be benefitted pro rata.

We can hardly blame the equipment companies for failure in applying economical methods to your business, as the laws of self-preservation govern all, and your interest to them is a secondary consideration just the same as your customer's interest is to you. If the equipment company worked out your problems, they must charge the cost to the equipment and you would think the price prohibitive; therefore they produce as near as possible standard equipment which they must sell at the least expense, and if it happens to be what your work requires it produces good results; you are then satisfied and so is the equipment company, but if it happens to be wrong and fails to produce the result, you both lose money and are dissatisfied with each other.

## SPECIFICATIONS FOR PLASTERING

The Kelley Island Lime & Transport Co., of Cleveland, Ohio, has issued a little handbook under the above title, the purpose being to assist the architect in writing his specifications for the use of hydrated lime for interior plaster work. The topics treated are general specifications, mixtures, mixing mat material, mixing prepared sanded material, mixing white finish, mixing sand finish, applying to wood lath (3 coats and 2 coats), applying to metal lath (3 coats), applying to brick or tile (3 coats and 2 coats), and applying to concrete.

The specifications given are intended to apply to the use of the company's hydrated lime plaster made with "tiger" brand white rock finish, which has been hydrated at the mill of the manufacturers and shipped in jute sacks carrying 100 pounds or paper sacks carrying 40 pounds, each bearing the name of the manufacturer. The sand should be a clean sharp sand, such as will pass through a Number 8 screen (64 meshes to the inch) and must contain not over five per cent loam. Where wood lath is mentioned it shall mean ⅜ by 1½ inch Number 1 spruce, hemlock and Norway pine laths, free from knots, bark or other imperfections; and where metal lath is mentioned it shall mean any standard make of expanded metal or wire lath which has been approved and accepted by the architect. Where hair, wood fibre and calcined plaster are mentioned it shall mean standard grades of these materials. The directions for the above-named purposes are then given in a very clear and understandable manner.

* * * *

The Kelley Island Lime & Transport Company has also issued a somewhat larger booklet dealing with the subject "Plastering." This describes the use of lime, particularly hydrated lime, for scratch, brown and white coat plaster. This material gives a finished job, exactly the same as the old-fashioned lump lime mortar, at the same time having none of the dangers common to the use of lump lime, and is also as easy to mix and wet up on the job.

The process of hydrating at the manufacturers' plant is scientifically done, so that every particle of the lime is thoroughly slaked and there is no danger of pitting or blistering. The manufacture of hydrated lime requires considerable costly machinery. The lime is first crushed to ¼-inch size or less, so that the water may get at it thoroughly. The mixing of lime and water is done in large steel cylinders. In these the lime and water are mixed so that every particle of lime comes in contact with the water. After the lime has been completely hydrated it is passed over screens which separate the lime from any unhydrated cores, lumps or other impurities. Finally, the hydrate is ground to an impalpable fineness and then packed in jute or paper sacks for shipping.

Whether hydrated lime and sand should be mixed on the job or whether it should be mixed at regular mixing plants and delivered sanded on the job depends on the local conditions in various cities as to quality and kind of sand used, costs, etc. This hydrated lime plaster can be readily mixed on the job with either mechanical mixing machines or in a regular mortar box. As a general rule architects prefer to have mixing of any kind of plaster mortar done at a regular mixing plant and delivered sanded on the job, all ready to wet up, as then they are sure of an even and uniform mix with dry and clean sand, and there is no chance for irregularity in mixing as when the mixing is done on the job.

Hydrated lime has many advantages for the architect, dealer, plasterer and owner of the building, in that it will not spoil in the sack, no matter how long it is exposed to the air. Hydrated lime is like Portland cement, because it does not deteriorate with age. The quality of the hydrated lime job does not depend in any way upon the laborers' work in mixing, because the slaking has already been done. The material can be prepared by soaking over night or by just wetting up.

For a good mortar for plaster the company recommends for the scratch coat 12,000 pounds of sand, 440 pounds of hydrated lime and 2½ pounds of hair; and for the brown coat 12,000 pounds of sand, 300 pounds of hydrated lime, and 1¾ pounds of hair.

If second coat work is done the following specifications are suggested: first coat—12,000 pounds of sand, 300 pounds of hydrated lime and 2½ pounds of hair. Where brick or tile is used as a base the hair may be left out of the mixture. A mixture thus made sets very quickly and makes a strong plaster, drying in a very short time, which appeals to the plasterer because he can put on his own brown coat in a short time and can mix more sand with it.

A mixture of hydrated lime for the scratch coat of nearly three to one makes a rich mortar, and for the brown coat sand can be used in proportion of four to one. As two-thirds of all plaster used goes into the brown coat, this makes the average cost per ton in three-coat work. In two-coat work the cost is also very low, as hydrated lime should be mixed 3¼ parts of sand to one of hydrate. On brick and tile the hydrated lime mortar can be doubled up, putting the scratch and brown coat all on at one time. On ceilings of tile the company recommends that the scratch coat be put on in the afternoon, and the first thing in the morning before the scaffolding is removed the brown coat should be applied.

On metal lath hydrate lime mortar should be done in three-coat work. It is necessary to have the scratch coat harden so as to stiffen the metal lath so that it will not sag. If the plaster is done in only two coats it is claimed that the weight of both the coats of soft mortar being put on at the same time makes the lath sag in between the studding.

On wood lath the hydrated lime mortar can be done in either two or three-coat work. In doing two-coat work on wood lath with hydrated lime plaster the scratch and brown coat can be doubled right away and both put on at the same time, and in the very cheapest sort of work on the wood lath the full thickness of scratch and brown coat is put on at the same time. In three-coat work on wood lath good ventilation in the room should be had and the scratch coat will dry out in two or three days, so that the brown coat can be applied, which will dry out in three or four days, and that the white coat may then be applied. It is no disadvantage to the plasterer if this length of time is required on wood lath, because he can rotate his work around the house or building, putting on the brown and white coat when the scratch or brown coat is dry.

Under exceptional adverse conditions, such as very dry or hot weather, and on walls where there is a constant draft blowing across them, all forms of plaster on wood lath will lath crack, due to the very rapid drying out of the mortar. In two-coat work, in using hydrated lime mortar this can be prevented in several very easy ways, namely: (a) by using more sand in the mixture; (b) by sprinkling and wetting the walls a few hours after they have been put on, so as to even further retard the setting of the lime mortar; (c) by running a float over the surface about five hours after the wall has been plastered, and (d) by the substitution of wood fibre (about 15 pounds of wood fibre to the ton of sanded material) instead of hair in the mixture. The wood fibre retains the moisture and retards the setting of the wall. As a matter of fact wood fibre can replace hair in all plaster with satisfactory results in those mixtures where hair is used.

"In three-coat work on wood lath the lath crack with either material makes no difference, for when the bond coat is put on all these cracks caused by the swelling of the wood lath are covered up. The best plaster of any kind is ¾ to ⅞-inch grounds and three-coat work is better than two-coat work. Where the grounds are thinned down to ½ to ⅝-inch a good all-around job cannot be done with any kind of plaster. On some work where no white coat plastering is done, the brown coat is floated smooth and then the surface tinted or decorated. In using hydrated lime plaster no sizing is necessary, as the lime plaster will not eat or mar the decorations or tinting.

It is also an advantage to use hydrated lime plaster because all the mortar droppings can be retempered and used over, as they do not harden and spoil. For applying finish or white coat hydrated lime is well adapted, as it can be used equally well where matt effects or rough surface is desired. Lime for this purpose must be even more carefully selected than that for the brown coat and scratch coat. The use of the lime produced from the limestone in Ottawa, Ohio, is set forth in the booklet. It also contains a great deal of general information which will be valuable to those interested.

## SAN FRANCISCO PLASTERS NEWS.

San Francisco, Nov. 18.—Quite a lot of plaster material has been used by the Panama-Pacific Exposition in experimental work, to get just the right composition and color effect for the staff coating to be applied to the Exposition buildings, and now the plaster work, in imitation of travertine marble, is being applied to the Machinery building. Construction contracts have been let for all the main exhibit palaces, and a large tonnage of plaster materials will be required.

The Sunset Plaster & Cement Company's plant at Fillmore, Cal., which was shut down for a time last summer, is again in operation, under lease to E. Duryea, Ph. Wiseman and S. W. Mudd, of Los Angeles; D. Strauss being in charge of the work.

Under a recent agreement between the Master Plasterers' association and the Hodcarriers Union and the Building Trades Council, carrying hods and buckets on street cars is eliminated, all tools except shovels and hoes to be hereafter furnished by the employers.

Floodberg & McCaffery have taken the plastering contract for the Mary Phelan building in San Francisco, at $12,000.

## TRUS-CON PLASTER BOND.

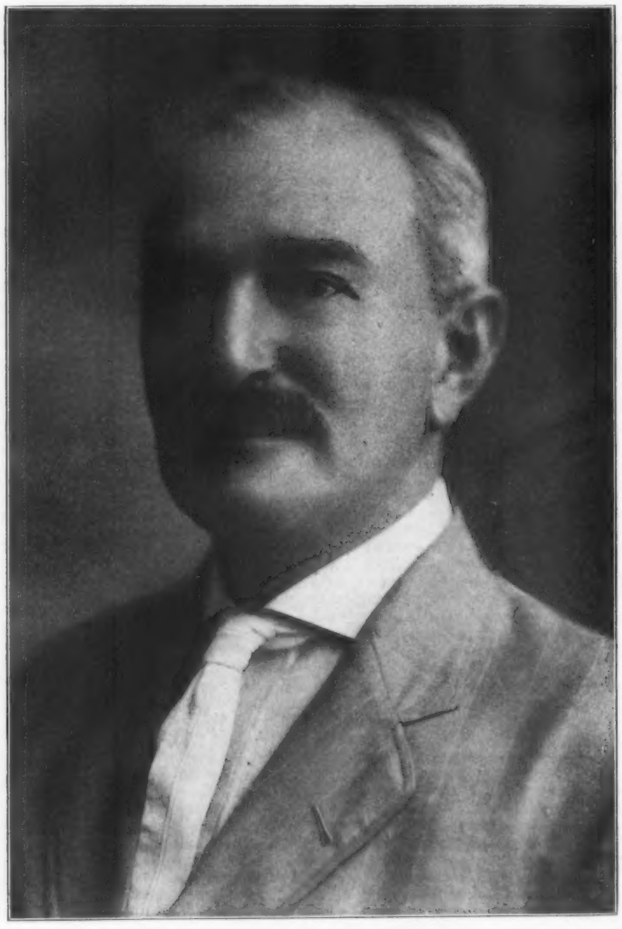
The Trus-Con Laboratories, of Detroit, Mich., has issued a little pamphlet describing Trus-Con plaster bond. This product is a special bituminous coating for dampproofing all exposed walls. Its use provides a continuous dampproofing element in all such walls which, it is claimed, perfectly insulates the interior from any evidence of dampness. On application to the surface it is partially absorbed into the pores, thoroughly sealing them and establishing a most inseparable bond.

The presence of the bituminous coat deeply deposited in the pores offers a positive and efficient bar against the continuous penetration of any moisture absorbed from the exterior exposed surface. Trus-Con plaster bond is so formulated as to indefinitely remain flexible and tacky after being applied to the wall, and will furnish a tenacious and permanent bond to the scratch coat of plaster trowelled directly on it. This property of plaster bond obviously serves the excellent and economical purpose of eliminating the inside furring and lathing, thereby increasing the cubic area of available space and overcoming the disagreeable features assimilated with such an air space.

The continuous coating of Trus-Con plaster bond on the interior of the exposed wall contributes a fair degree of insulation which, although not equivalent to an air space, yet for a great number of applications is insufficient. It is to be emphasized that the prime function of Trus-Con plaster bond is to provide a continuous dampproof coating on all exposed walls, and its special feature of holding a coat of plaster applied directly to it is useful but distinctly a secondary consideration to its dampproofing efficiency. As this product is fundamentally a dampproof coating it is only recommended for treating the interior of exposed vertical walls. It may be used on interior partitions for its bonding capacity, but the company does not generally recommend it for use on ceilings and similar surfaces on a horizontal plane.

Trus-Con plaster bond is applicable to any horizontal surface, and should accordingly be applied only to a dry surface, so as to insure the proper absorption and penetration into the wall. As continuity is absolutely necessary for satisfactory results from plaster bond, special care should be taken to insure a continuous coating to the floor levels and ceilings below, and in cases where this is not possible the concern recommends that the plaster be carried back about 12 inches on the ceiling before plastering.

The product should be applied with a brush similarly to paint, and must present an even, uniform, black appearance before being coated with plaster. In cases where the first coat penetrates deeply into the surface it is very necessary that a second coating be applied so that the entire area will have the most even, uniform and black appearance. On surfaces of average porosity it is entirely safe to estimate the covering capacity of Trus-Con plaster bond at 75 square feet per gallon.



**SAMUEL LAZARUS, ST. LOUIS, MO.**
**PRESIDENT OF THE ACME CEMENT PLASTER COMPANY.**

Samuel Lazarus is one of America's big business men. From early manhood he has been accustomed to handling big propositions and has handled them successfully, so that his career has been one continuous program of progress, enterprise and success. His earliest fortunes were accumulated in live stock operations on the Texas plains. Since then he has been the builder and operator of railroad lines, the builder and developer of gypsite and gypsum mills and plaster products. His personal magnetism has made him popular, and he is perhaps one of the best-known and most widely-respected citizens who ever claimed Texas for their home, for he made his residence in Sherman, Tex., for many years. He now resides in St. Louis, and, without attempting to be a politician, obtains the supreme reward of running ahead of his ticket without electioneering, and is frequently called upon to act as the mayor of the great city of St. Louis. His life has always been a busy one and, like most men of his calibre, he is magnanimous and charitable. He inspires confidence and loyalty throughout all his business connections, which amounts to the most active co-operation of every worker in his immense business organization. Such co-operation, surrounding such a leader, has always been the principle which made the big American business successes that have been considered by foreigners the magic of American commerce.

**UNITED STATES GYPSUM SHARES ACTIVE.**

The directors of the United States Gypsum Company have declared a quarterly dividend of 1½ per cent, thus increasing the rate from 5 to a 6 per cent annual basis. The disbursement is payable January 1 to shareholders of record December 15. The company, it is understood, has been earning at the rate of about 10 per cent on the preferred stock, while paying 5 per cent. This has resulted in building up the working capital, and with the proceeds of the $1,500,000 .6 per cent five year debenture gold notes sold last year, and not maturing until April 15, 1917, has placed the company in a sound financial position. Under the trust deed on which the notes are predicated the company must maintain net quick assets equal to 50 per cent of the outstanding notes, and no lines or mortgages can be created during the life of the note. The total surplus at the end of 1912 was $1,189,769. This accounts for the activity and strength of the Gypsum company's stock recently. The preferred stock has risen some 10 points in the last few days.

**WILL REBUILD PLANT.**

The American Cement Plaster Company will rebuild its mill southeast of Ft. Dodge, Ia., destroyed by fire Friday morning, Oct. 24, with a loss of $75,000.

R. A. Henley of Lawrence, Kansas, secretary of the company, declared that the mill will be rebuilt of fireproof construction. He declared the company had just installed electric motors through the plant before the fire.

It was expected the company would rebuild as they have a big stucco block factory near the site of the mill. This plant probably will not be operated until the new mill is completed.

The new structure will be the same size as the old mill, but will be more up to date in equipment.

**HAVE DONE A BIG BUSINESS.**

Pittsburgh, Nov. 18.—The plaster companies that do business in the Pittsburgh district are well satisfied with the year's business. Architects throughout this section have been put through a course of education which is causing them to specify much more material furnished by these concerns. The Colonial Wall Board & Plaster Company, with offices in the Frick building, reports this year fully 20 per cent more satisfactory in its total of sales and net profits than 1912. It is working eastward very largely in its business, although trade in the Pittsburgh district has been pretty fair all the year. Its plant will run all winter.

Michigan Fire Proofing & Plastering Co., Detroit, Mich., capital stock $10,000.

The Moundsville Wall Plaster Co. at Moundsville, W. Va., has been incorporated with a capital stock of $25,000, by Wm. Fisher, J. W. Peters, G. F. Searls and others.

Edwin H. Gebroad, of Grand Rapids, Mich., is promoting the organization of a sand, gravel and gypsum company for the development of some rich deposits near that city.

The improvements now nearing completion at the Brazos Tile & Brick Company, in Rosenberg, Tex., will cost $50,000. The company contemplates a reconstruction of the entire plant.

An increase from only 90,000 tons in 1880 to more than 2,500,000 tons last year has taken place in the production of gypsum, principally used in manufacturing plaster, in the United States, according to statistics of the geological survey. The production last year, a record, was valued at more than $6,500,000.

The American Keene Cement Company, Sigurd, Utah, with branch offices in Salt Lake City, Philadelphia, Chicago, and San Francisco, has issued a booklet containing specifications for the use of American Keene cement for plastering purposes. The booklet also contains directions for mixing and applying and mentions the different finishes which may be obtained. A department of the booklet is given over to special interior work, such as bath rooms, toilet rooms, kitchens, wainscots, etc.

# CLAY

## LOUISVILLE BRICK NEWS.

**Present Season Presents Adverse Conditions—Few Plants Will Operate During Winter Months—General News of Interest.**

Louisville, Ky., Nov. 18.—The pronounced falling off in building operations which has been in evidence during the fall has naturally affected brick men rather adversely. Very few jobs of any size are under way or in prospect, and indications are that the winter will be a very dull one. Next spring offers the only hope of really good business, especially in view of the general predictions of a severe winter, of a sort to discourage building operations still further. Common brick has been the most active line, with high-grade face brick for residences moving rather slowly. Some paving is being done, but not enough to call for any large volume of brick.

H. D. Roy, president of the Coral Ridge Clay Products Company, stated recently that the company expects to complete the several kilns which are under way in time for the first of the spring business, February 1 being the date set. At the present time the company is turning out a good volume of brick with the aid of several temporary kilns, which are used in addition to the permanent kilns which are available. Only common brick have been made so far, but the company expects to make a full line of high-grade face brick, as well as hollow tile and other forms of fireproofing material, when its plant is completed according to its present plans. George H. Fielder, general manager of the company, was in Atlanta recently on business.

When the lease of the East End Brick Company, on its present property expires in July next, it is probable, according to one of the officers of the company, that it will seek a new location instead of taking a renewal of the lease, as the end of the clay deposit now being worked is in sight. Nothing definite has been done in this connection, however; an alternative of a new location is being considered in the shape of a possible consolidation with the Hillenbrand Brick Company. If this is done the Hillenbrand plant will be considerably extended in order to take care of the larger business which will have to be handled.

R. B. Tyler & Co. recently began deliveries on an order of 150,000 face brick for use in the six-story Puritan apartments at Fourth and Ormsby avenues. The brick are made by the Clayeroft Mining & Brick Company.

Indications are that there will be a general shutdown among brick manufacturers in Louisville, beginning in the latter part of December and lasting from three to six weeks. There are said to be ample supplies of brick to last over the interim, and the manufacturers will have an opportunity to overhaul their plants without much danger of losing any business.

The Diehl Pottery Company, of Rockhill, Pa., will hold its annual banquet on October 25, at the pottery vaults of the plant at Rockhill.

The Penn Tile Company, of Dillsbury, Pa., has opened the clay mine on the James Williams farm, in Franklin township, near that place. I. S. Fishel is manager of the operation.

The Kittanning Brick & Fire Clay Company, Pittsburgh, Pa., reports a splendid year's business. It is considerably oversold on its brick and is not taking any orders for immediate delivery for this reason. Its plants are running full and the season has been very prosperous.

The Equitable Brick Manufacturing Company, Ltd., of Philadelphia, Pa., recently sold a portion of a 13-acre tract of land in that city, which is owned by the company and assessed at $169,000, to Martin Malony, who has financed an operation of 31 brick houses on the plot.

The Indiana Paving Brick & Block Company, Indianapolis, has increased its directorate from three to five, the new directors being both women, Mrs. Jennie R. Winslow and Miss Margaret E. Barclay. Mrs. Winslow is the wife of the president, W. W. Winslow, and Miss Barclay is the secretary of the company. Both have taken stock in the company. The plant is at Brazil, Ind., and the office in Indianapolis.

C. L. Boyd, of Camden, Arkansas, has discovered on his land a large deposit of clay lying beneath a bed of lignite. It is of the same general character as the famous fire clays of that neighborhood and is situated about 400 yards from the West Camden switch of the Iron Mountain Railroad. Mr. Boyd states that the lignite above the clay will furnish all the fuel gas necessary to burn brick and tile, and desires to get in touch with interested parties with a view to utilizing this deposit.

George S. Good, of Lockhaven, Pa., a widely-known manufacturer of firebrick and terra cotta products, died at his home in that city, on October 14. He was born near Milton, Pa., in 1884. Mr. Good was a veteran of the Civil War, and was among the 109 men who tunneled their way out of Libby prison, where he had been confined on two different occasions. He was interested in the new town of Patton and did much to aid its growth and operated large heater and firebrick plants in both Patton and Clearfield.

Additional importance to the brick industry of Sioux City, Ia., is attached by reason of the announcement of purchase by the newly organized Sioux City Brick and Tile Company of the Sioux City Brick and Tile Works, an old established concern. News was given out only a short time ago of the taking over of the Clay Products Company. The Brick and Tile Company was organized recently by attorneys for the Brick and Tile Works and commences business as a corporation, with a paid-up capital of $500,000, provision having been made for increasing it to $1,000,000 whenever the requirements of the company in developing business justify the enlargement.

CEMENT GROUTED BRICK PAVEMENT, LAKE FRONT DRIVE IN CLEVELAND PARK SYSTEM.

The waves from Lake Erie have washed away the masonry shore protection and carried off the earth support of the roadway. The washout, or excavation, extends fully to the center line of the brick work and has a clear span of one hundred feet, supported along one side as shown in the picture. Eight feet is the total heigth of the opening. Striking illustration of arching value of hard brick set in rich cement grout.

# SAND AND GRAVEL

**NATIONAL ASSOCIATION OF SAND AND GRAVEL PRODUCERS.**

(Meets Annually.)

**Officers.**

President—F. W. Renwick, Chicago Gravel Company, 343 South Dearborn street, Chicago, Ill.

First Vice-President—H. H. Halliday, Halliday Sand Company, Cairo, Ill.

Second Vice-President—W. F. Bradley, Ohio & Michigan Sand & Gravel Company, Toledo, Ohio.

Third Vice-President—H. F. Curtis, Lyman Sand Company, Omaha, Neb.

Fourth Vice-President—Lee R. Witty, Wabash Sand & Gravel Company, Terre Haute, Ind.

Fifth Vice-President—J. J. Neary, Utica Fire Sand Company, Utica, Ill.

Treasurer—C. H. Brand, Atwood-Davis Sand Company, Chicago, Ill.

Secretary—Chas. D. Warner, Boston, Mass.

The Cedar River Stone and Gravel Co., at Waverly, Ia., recently began operations. This company will utilize a plant which has been idle for several years. In addition to marketing crushed rock, the company will also deal in gravel and stone cement products.

J. K. Myers has sold out his interest in the Edgemoor Sand, Gravel & Manufacturing Co., West Pittsburgh, Pa., and has bought 86 acres on the Erie Railroad and Shenango river, between Newcastle, Pa., and Shoshone. Mr. Myers expects to build a gravel washing plant with a capacity of 30 cars per day in the near future. His gravel deposit is from 40 to 70 feet of good material and is located only 22 miles from Youngstown, Ohio, and is near some 20 odd other smaller cities.

Michigan City Sand Co., Michigan City, Ind., incorporated, capital $10,000. Will excavate sand. Incorporators, Carter H. Manny, Finley C. Carson, Samuel W. Larsen.

Eastern Gravel Corporation, Brookhaven, N. Y., incorporated. Quarry and deal in gravel, etc.; capital $200,000. Incorporators, A. J. Kay, J. Peasly, S. B. Leeds, New York City.

Wellesley Gravel Company, Wellesley, Mass., incorporated; capital $60,000. Promoters, L. J. Coleman, N. L. Goodell, Walter M. Sanborn, Augusta, Me.

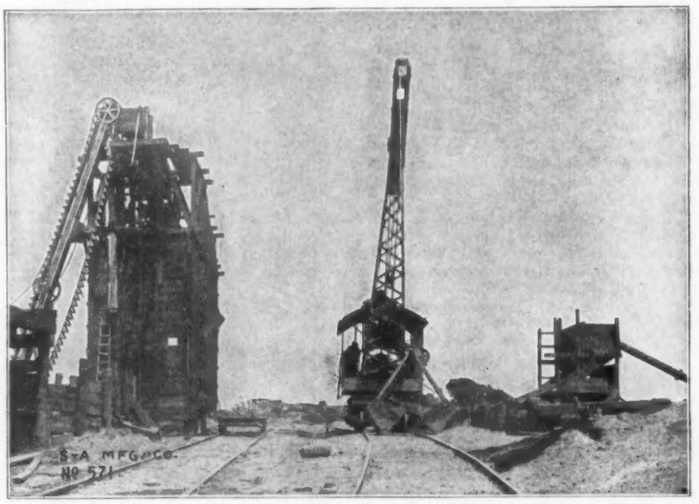
Walter L. Kirkman, Malvern, Ark., purchased a sand bar on the Mississippi river at Ripley, Tenn., of 787 acres, and contemplates organizing a company for development.

The Island Sand & Gravel Co., Columbus, Ohio, capital $50,000. Incorporated by Edward N. Lodge, Bart Driskell and Edward O. Melvin.

Samson Silica Co., Camden, N. J.; deal in sand, stone, rock, gravel, etc.; capital, $250,000. Incorporators, F. R. Hansell, J. A. MacPeak, T. C. Clow, Camden.

## No. 5 Plant, the Coon River Sand Company

The activity of Des Moines, Iowa, due both to the energy of its citizens and to the need of creating a market for the electrical energy of the Keokuk Dam, is making life interesting for the contractors and material men. The sand and gravel business consequently comes in for its usual big share of the work and the spoils. Chief among the sand and gravel producers of this vicinity is the Coon River Sand Co. This company operates a number of plants along the Coon river, operating almost entirely on gravel dredged from the river by means of suction dredges. Their No. 5 plant has recently been redesigned and equipped with modern machinery and a number of the problems have been overcome in an interesting manner.




THE PUMP DISCHARGES TO THE HOPPER AT THE RIGHT, WHICH FEEDS THE TUNNEL CONVEYOR LEADING TO THE PLANT.

Originally, the water and gravel pumped from the dredge were delivered to a point above the bins, discharge being made over flat wire screens and separation being thus made to the various bins. In the design of the No. 5 plant, the main problem considered was to avoid the lifting of the great volume of water to the height necessary under the old arrangement. Other considerations were to secure better separation and to avoid the extra lift necessitated by the gravity screens. It was also necessary to reduce the larger stones to commercial sizes.

The illustrations show how these things were accomplished. The barge is still used as before, its location being shown in Plate No. 569. The discharge pipe is carried on pontoons to the shore, where it discharges but a few feet above the water level. With this low head to work against, the capacity of the pump is very high and a high percentage of solids is carried.

PLANT OF THE COON RIVER SAND CO.

Referring to the drawing, we see the pump discharge delivered at the right to a hopper feeding a gravity wire screen. The fine sand and the water pass through the screen into a large tank in which the water drains off to the river. The oversize from the screen drops into a hopper feeding onto a 24-inch by 95-foot "S-A" belt conveyor. As indicated in the drawing, this conveyor operates in a tunnel beneath the railroad tracks for the first half of its length and then rises to an elevation of ten feet above grade. Discharge from here is made onto a grizzly which feeds the oversize to a crusher, allowing the fines, with the crushed material, to flow onto No. 2 belt conveyor (24 inches wide by 24 feet centers). No. 2 conveyor feeds a No. 5 crusher elevator, 47 feet centers, which, in turn, feeds the screens at the top of the plant.

Two 60-inch "S-A" Improved Gilbert screens are used. The first screen discharges material passing 1-inch mesh to the first bin; that between 1-inch and ¾-inch is rejected by the second screen to a corresponding bin; and that below ¾-inch goes to a fine cylindrical draining screen. The fine sand has already been separated at the pump discharge so that nothing passes through the draining screen but the washing water with the foreign material in solution. The oversize from this screen passes into a third bin and is classed as torpedo sand. The use of the Improved Gilbert screens saves a great deal of the expense incident to renewals, as the wear on the outer plate is thus reduced more than 50 per cent. In this type of screen, a small inner skirt takes the entire wear of material falling from the chute and distributes the flow evenly to the outer screen plate. The inner skirt is easily renewed at slight expense, while the frequency of renewals of the outer plate is reduced 50 per cent, due to the reduced wear.

Delivery of the material is made from the bins through sliding gates and chutes to the railroad cars. The fine sand is removed from the settling tank to the cars shown in an accompanying illustration by means of the locomotive crane.

During the present season this plant has produced a product consisting of a high-grade of washed sand and gravel, which helps to meet the demand of the Des Moines market. The general arrangement and type of equipment is considered to be a great improvement over the old system, not only as regards character of the product and cost of production, but in increasing the capacity.

Stephens-Adamson Manufacturing Co. redesigned the plant and manufactured the necessary conveying and screening equipment.

J. F. Benson, formerly with the Van Noy hotel at Wynne, Ark., the important railroad junction, is promoting a new hotel there.

## PITTSBURGH SAND AND GRAVEL NEWS.

### Conditions of Industry Changed by Weather—Business Among Operators Has Been Favorable.

Pittsburgh, Pa., Nov. 18.—The big snowstorm on Sunday has put the sand companies "on the bum," so far as operations in several places are concerned. All sand companies have been very busy this fall. The big building operations down town in Pittsburgh have taken a lot of material from these concerns and there has also been a fairly good trade in foundry and glass sand. The river sand companies have been working all their boats and barges. Shipments by these companies will probably be larger than last year. Those companies which have mine sand plants are now considering themselves fortunate, for business is still good in many lines and they are in shape to run right along all winter. Many concerns are storing a large amount of sand in anticipation of the demand from railroads and trolley companies during the hard winter which is predicted. Business in carload lots has been better with the sand companies this year than for a long time.

The Althom Sand Company of this city is operating a large plant at Thompson, Warren county, Pa., under lease to De Cairo & Co.

The plant of the Derry Glass Sand Company at Derry, Pa., was badly damaged by a fire October 22d. The power house which operated the incline was burned and it will be several weeks before the plant resumes operations.

The Pittsburgh Plate Glass Company has sold 100 acres of land known as the Brenton tract near West Brownsville, Pa., to J. Y. Binns of Brownsville, Pa. When a plate glass company started operations several years ago in the Monongahela Valley it was reported that dredging of sand in that river would not be permitted by corporations, and the glass company bought this farm in order to protect it against a possible shortage of sand. Seventy-five acres of the farm are underlaid with 83 per cent silica sand, and this will be mined in a short time.

The Ohio River Sand Company, according to Manager McGaw in the House building, is pretty well satisfied with fall business. It is working twelve flats and one digger double turn in the Ohio river opposite Ambridge, Pa., and is making a big total of carload shipments this month.

The Beaver Sand Company is about ready to operate its sand plant again near Beaver, Pa. Beaver capitalists are interested in this company, which has been putting in extensive improvements in the plant.

The Winfield Sand & Material Company was well pleased with the outlook, stating that the plant at West Winfield, Butler county, Pa., will operate all winter. This is a mining proposition and the company is equipped to turn out a big capacity. It is now improving its property by building a storage plant to hold 2,000 tons. This is for the purpose of enabling it to make more prompt shipments all the time and especially to take care of its big trade in railroad sand in the winter.

The Elwood Sand Company at West Elwood Junction, Pa., is storing a big lot of sand for its trade with the coal companies and the railroads and traction companies this winter. The demand for this company's washed sand is increasing right along and its plant is better equipped for turning out a fine product than ever before.

## SAN FRANCISCO SAND AND GRAVEL NEWS.

San Francisco, Nov. 18.—The California Building Material Company, whose gravel washing and screening plant at Niles, Cal., has gradually grown to large proportions, is now planning to start a new gravel project, and is prospecting and testing a tract secured under option between Livermore and Pleasanton. If the material is found in sufficient quantities a handling outfit will be installed. J. B. Barnard is in charge of the present work at the new place. It is said that the Niles plant will remain as the principal source of supply.

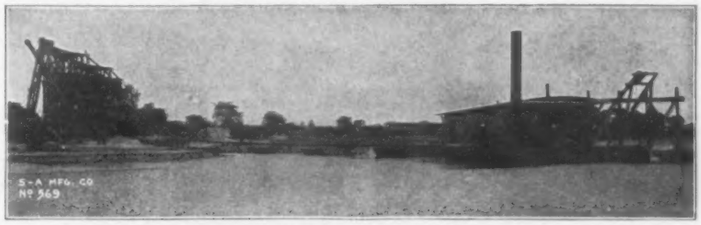
The E. B. & A. L. Stone Company, of San Francisco, is keeping quite busy at most of its plants, and the scale of operations is gradually increasing. This company has taken over the plant of the Keystone Sand Company at McNee, on the Ocean Shore railroad, giving it two sand pits on this line. The other, at Pilarcitos, is in steady operation, and the product from these plants is now handled by a large bunker at Eleventh and Harrison streets, San Francisco, where an up-to-date unloading conveyor has been installed. Operations in Santa Clara county are also being increased, that in Coyote wash being well occupied, and another gravel plant is being set up in Los Gatos creek at Campbell.

## A "SAND LAUNDRY."

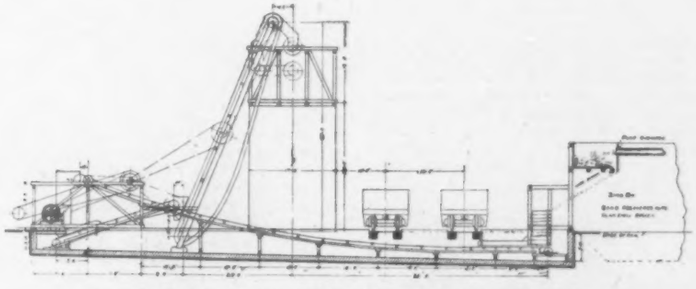
The Kansas City Sand Company, of Kansas City, Mo., has in operation what is termed a "sand laundry." The new device simplifies the river industry in that it raises, cleans, separates and loads 3,000 tons of sand a day. This plant has been installed on the Kaw river at a cost of $50,000. An important feature of the new plant is the new invention to wash sand as it is taken from the bottom of the river. The device is claimed to eliminate the mud, shale and coarse sand from the product obtained from the bottom of the river, and to be able to produce two grades of clean sand. It is the invention of W. H. Caffery, president of the Western Crushed Rock Company, and Charles Meierhoffer, president of the Missouri River Sand & Gravel Company, and was put in actual operation the latter part of October.

The plan of the "sand laundry" is simply. A barge in the river carries a pump propelled by a 300 h. p. electric motor. A suction pipe from the barge to the river bottom carries the sand, mud, gravel, water, etc., up through the barge, through a 10-inch pipe and into a big steel pan 40 feet wide at an elevation of about 50 feet, forced through by the pump in the barge. There the sand, being the heaviest ingredient in the whole mass, sinks to the bottom of the big pan, while the mud and the refuse are washed on with the water flowing from the pipe. The constant flowing of water from the river through the big pipe washes the cleansed sand through a sieve running the full forty feet of the pan into a basin. The force of the water carries the fine sand over the first basin into a second while the coarser grain fall into the first bin. The fine sand then follows the water up into a second bin, thus giving two grades of perfectly clean pure sand. The mud and refuse then is carried from the "laundry" back into the river through an outlet pipe.

The bins are built over railroad tracks and at an elevation sufficient to allow a sand car to run under. The simple manipulation of a lever lets the sand fall from the bin into the car, loading it in a very short time. The capacity of the plant is 75 cars per day or about 3,000 tons. Two men in the barge, two men operating the pump and directing the suction pipe and two men at the bins are all that are necessary to operate the whole concern except, of course, the train crew for loading the cars.




SHOWING THE DREDGE, THE PIPE LINE AND THE PLANT.



GENERAL ARRANGEMENT OF CONVEYOR AND ELEVATOR.

The Eastern Gravel Corporation of Brookhaven, N. Y., has been chartered with the Secretary of State, with a capital of $200,000, and the following as directors: Albert J. Kay, Joseph Beasly and Stanton B. Leeds, of New York City.

The plant of the Crystal Sand Company, four miles to the south of Millville, N. J., on the West Jersey and Seashore Railroad, was considerably damaged by a recent fire, at a loss estimated at over several thousand dollars.

## MILWAUKEE SAND AND GRAVEL NEWS.

The Fisher Sand & Gravel Company of Janesville, Wis., has filed an amendment to its articles of incorporation, increasing its capital stock from $30,000 to $70,000.

David A. Stevens, consulting engineer, of Chicago, who recently acquired a controlling interest in the Silica Products Company, operating a brick and sand plant just south of Portage, Wis., was in Milwaukee recently and announced that if a suitable site could be secured he would erect three or four silica elevators in Milwaukee. "There is the finest deposit of silica in the country in the property which I have purchased near Portage, Wis.," said Mr. Stevens. "So far as I know, it is the only one in Wisconsin. It has been worked for some time, but until recently has not been pushed as it should be. I am here now to see what can be done about elevator service in Milwaukee. If a suitable site can be obtained, three or four large elevators will be erected."

"Silica is really crystallized sandstone, formed by the tremendous heat at the time when the earth's crust was cooling. It looks like beautiful white sand. Foundries utilize it in making molds; it is one of the ingredients in a number of scouring preparations; of course it is the important ingredient in glass manufacture, and, mixed with Missouri lime, it makes the finest brick imaginable. The railroads are beginning to take it up in place of the usual sand used on the engines."

## SAND AND GRAVEL OUTPUT OF RECORD VALUE.

The total output of sand and gravel in the United States in 1912, according to an advance chapter from Mineral Resources on the Production of Sand and Gravel, by Ralph W. Stone, issued last month by the United States Geological Survey, was $68,318,877 short tons, valued at $23,081,555, as compared with 66,846,958 short tons, valued at $21,158,583, in 1911, and 69,410,436 short tons, valued at $21,037,630, in 1910. The increase in quantity last year over that of 1911 was 1,471,918 short tons and in value $1,922,972.

With the exception of 1910, the production recorded last year was the largest ever recorded in the history of the sand and gravel industry. The value of the material produced in 1912 was the highest ever recorded.

Sand for building purposes constitutes about one-third of the total product. In 1912 the production of building sand was 23,632,157 short tons, valued at $7,904,321, as compared with 24,614,342 short tons, valued at $7,719,286, in 1911, a decrease in production of 1,082,185 short tons, but an increase in value of $185,035 over the output for 1911.

The total production of gravel used for concrete, paving, filter beds, roofing, roadmaking, railroad ballast, and other purposes in 1912 was 29,768,510 short tons, valued at $7,737,942, in comparison with 26,592,982 short tons, valued at $6,720,083, produced in 1911, an increase in quanaity of 3,175,528 short tons and in value of $1,017,859.

LOADED BUCKET LEAVING GRAVEL PIT AT MATERIAL HANDLING PLANT. LOADED BUCKET OF MATERIAL TRAVELING UP INCLINED TRACK CABLE.

# HANDLING SAND AND GRAVEL

## A Real Element of Economy Results From Adequate Material-Handling Plants in Highway Construction Operations.

The economical handling of materials, "on the job," in highway improvement work has proven of vast interest to material dealers in all sections where such work progresses. It is necessary for material handling plants to add expediency to the work that will spell economy. The expense in connection with the handling of materials has generally been a severe disadvantage to material dealers, inasmuch as this element alone has in so many cases been ungovernable because of inadequate methods which cause expensive delays. A producer plant for the handling of sand and gravel is one of the greatest economy and efficiency functions in this class of work, as it was recently proven by results obtained in the highway improvement work of Milwaukee county, Wisconsin.

The Milwaukee county board, this past season, made many opportune advances in their highway construction work, of such character as to prove that material handled on the various jobs could be done with economy and advantageously. The highway work in Milwaukee county consisted in the building of concrete and gravel roads, concrete bridges, culverts and curbing. H. J. Kuelling, C. E., highway commissioner, and his assistant, A. E. Broker, gave personal supervision to the operations on these highways and the element of economy resulting is of vast interest and importance.

After locating a suitable gravel pit, Mr. Kuelling caused the sand and gravel to be thoroughly tested and analyzed in order to make sure that the strongest possible concrete would be secured with the least possible expense. The test showed that most of the sand and gravel was well suited for the work and only required proper sizing and grading. The question of economic handling and sizing of the sand and gravel resulted in a thorough investigation of various types of plants and their relative adaptability to the work. A dragline cableway excavator was selected, and the decision to use this method for handling the material was based on extent of span operation; that the outfit would dig, elevate, convey and dump the material in one operation; readiness with which change of operation could be made; the gravity element for returning empty bucket and eliminating power necessities; time saved in dumping by continuous forward movement; simplicity of construction without locks, latches or springs, and the dumping operation being under positive control of operator, thus the material could be poured from bucket very slowly to the screens, insuring a cleaner and better separated product.

The cableway excavator installed consists of a three-fourths cubic yard capacity scraper bucket, suspended from a carriage which travels on an inclined track cable. The bucket and carriage travel down this inclined track cable to the point of digging when the track cable is slackened and the bucket is thus allowed to come in contact with the material to be excavated.

The bucket is filled by pulling same into the material by means of a pull cable attached to the front of the bucket, when the bucket is filled the track cable is pulled taut by means of a tension mechanism. By tauting the track cable the bucket is lifted clear of the pile and it is then hauled up the inclined track cable by means of the pull cable. At the point of dumping an adjustable button on track cable is provided. A traveler block coming in contact with this button dumps the bucket automatically by a continuous forward movement. A two drum hoist operates this excavator. One drum operates the tension mechanism and the other drum operates the pull cable which loads the bucket and pulls it up the inclined track cable and also dumps the bucket.

The accompanying photographic reproductions show in a comprehensive way the vast utility of the plant in connection with the service rendered to the Milwaukee county highway improvement work.

The gravity screen system consists of two sets of inclined screens. The screen at top structure takes out the oversize material; the second screen separates the gravel from the sand. The structure is so designed that should it be found necessary to wash some of the material it can be done with little additional expense.

The design for the plant and the cableway is of the Shearer & Mayer type and was furnished by Sauerman Bros., of Chicago. The plant is specifically designed to force economy in the handling of the materials required for road building work.

THE PLANT IN OPERATION SHOWING MATERIAL HANDLED.

MATERIAL BEING DUMPED ON TO GRAVITY SCREENS.

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"Trailers" is the title of a twelve-page booklet recently issued by the Troy Wagon Works Co., of Troy, Ohio. Trailers for motor trucks, manufactured by that company, are therein illustrated, described and shown to be adaptable to increasing general motor truck efficiency in handling quantities of heavy materials on short and long hauls.

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The Best Bros. Keene's Cement Company, Medicine Lodge, Kansas, has issued a specification catalogue which includes directions for the use of their product, together with much other matter of pertinent interest. The pages of the catalogue include essential information which will prove of interest and value to every user of cement for any and all purposes.

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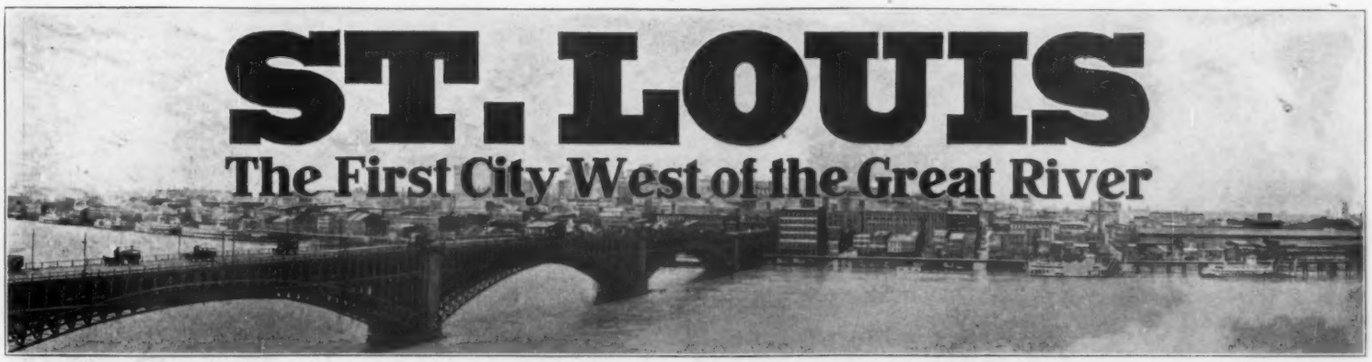
Booth & Flinn, Ltd., of Pittsburgh, Pa., have received the contract for the approaches to the North Side Point bridge over the Allegheny river in that city. Their bid was $224,000; piling $1.25 and paving $3.00. The other Pittsburgh firms which figured on the job were James H. McQuade, $312,000; Pittsburgh Construction Company, $305,000; John F. Casey Company, $224,000; Dravo Contracting Company, $295,000, and McCarthy & O'Herron, $274,000. The work will not be completed before June of 1915.

# ST. LOUIS

## The First City West of the Great River



St. Louis was founded Feb. 14, 1764, by a party of Frenchmen under August Chouteau, a 14-year-old boy, who had been sent up from New Orleans by his stepfather, Pierre Laclede Liguest, to establish a settlement on a site already selected as a post for trading with the Indians. The little village was named in honor of Louis IX of France. By secret treaty France had already, in 1763, ceded the entire territory west of the Mississippi to Spain, but no knowledge of the treaty was received in Louisiana for some years, and the settlement remained French. In 1765 St. Louis was made the capital of Upper Louisiana, with Saint Ange de Bellerive as governor. In 1769 the village of St. Louis contained 17 white men, 16 white women, and 17 negro slaves. In 1770 the Spanish took formal possession, and Don Pedro Pierras was inaugurated governor November 29. The village remained under Spanish control for 33 years. By another secret treaty Spain ceded the territory back to France in 1800, and in April, 1803, Napoleon sold the entire Louisiana territory to the United States.

The city of St. Louis has had a wonderful development. When its progress is considered this will be plainly seen. St. Louis was incorporated as a town in November, 1809, with a population of 1800 and as a city in December, 1822, with a population of 4,800. It then covered an area of 385 acres. St. Louis now embraces an area of 40,000 acres and it has within its corporate limits 64 square miles. Its frontage along the Mississippi River is 20 miles and for a single fare of five cents this entire distance can be traversed by street car without change. The city of St. Louis now has a population, according to the recent census taken by the city directory publishers, of approximately 850,000. St. Louis has four great parks, one of which, Forest Park, contains 1,352 acres and which is still a virgin forest with trees in it more than 100 years old. There are a large number of small parks scattered through the city—breathing places—and in the past two or three years dozens of public play grounds have been established with play apparatus and sand piles for the children of the neighborhood.

It has been said that St. Louis is the only great city "completely surrounded by the United States." This city is situated almost exactly in the center of population and likewise almost in the center of the United States, geographically speaking; 30,000,000 people live within one day's ride of St. Louis and no other city in the Western world can claim that advantage. You can travel 300 miles from St. Louis in any direction without encountering any large area of water or a single acre of land unfit for habitation or cultivation. St. Louis is also the center of agricultural United States and it is these raw materials raised close at her door which keeps the busy wheel of commerce turning.

The city stands on a gentle bluff with an average elevation of 100 feet above the river and about 500 feet above the sea. It stretches along the Mississippi a distance of 20 miles, and its greatest width, east and west, is about eight miles. The surface is rolling and drainage by the city sewer system has been easily accomplished. "Mill Creek" valley, which extends east and west and bisects the city, was once the bed of a lake (Chouteau Pond). It is used chiefly for depots, railroad yards, and industrial establishments. Bridges and viaducts carry street traffic across the valley.

The Mississippi river borders the city in the form of the arc of a circle, the city on the concave side. In the river are several islands; the largest, Cabaret and Kerr, belong to Illinois. The river is here a vast torrent of turbid water which picks up and drops again large masses of sand and silt as the river rises and falls. It is very deep abreast the city, and in good weather there is a continuous depth of 12 to 14 feet all the way to the Gulf of Mexico. It regularly rises and falls during the year about 25 or 30 feet. High water mark is 412.7 feet above sea level. In no case has the river climbed far up the bluff upon which St. Louis is built. West of the city the land spreads out in a picturesque plateau.

### St. Louis Churches

The religious phase of St. Louis' history is found in a record of steady growth in the number of churches. There are 380 churches in St. Louis, representing every denomination. St. Louis is recognized as one of the most moral of the large cities of the world. The churches are so scattered throughout the city that there is no residence district without church privileges. More than $10,000,000 is invested in church edifices, many of them among the most imposing structures in the United States, and in addition large sums are invested in hospitals, homes, schools and other religious institutions under the control of the churches. St. Louis pays annually over $1,000,000 for the maintenance of the churches and nearly as much more for city benevolent enterprises under church direction. Protestants, Catholics and Jews stand shoulder to shoulder in many movements for the public welfare. The church life of the city is keeping pace with the great increase in business. There was never a time in the history of St. Louis churches when they were so active or looked forward to larger programs.

An active Church Federation, with offices in the business section, is leading in the direction of the constructive unity. The ministry of the city includes many men especially noted throughout the country as theologians, pulpit orators and religious leaders.

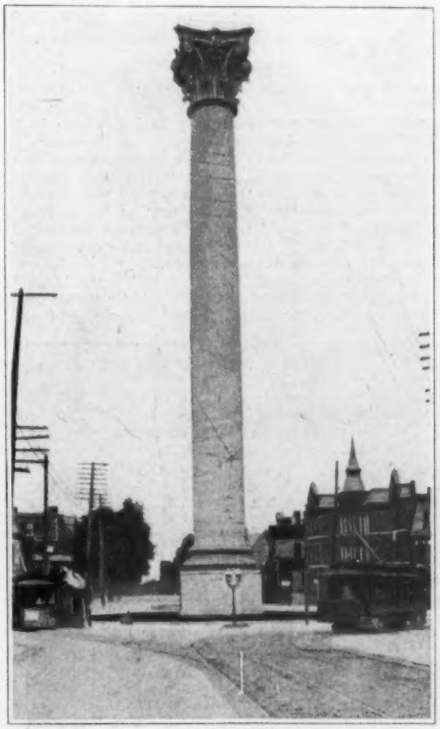
Bearing an important relation to the religious activities of the city is the City Rescue Mission. This institution occupies its own building and is located in the heart of the most congested portion of the city.

Among the local charitable organizations of the city the St. Louis Provident Association, St. Vincent de Paul Society and the Associated Hebrew Charities are the most prominent. Among the more famous churches are the old Catholic Cathedral on Walnut street, between Second and Third; the Christ Church Cathedral (Episcopal) on Thirteenth and Locust; the Centenary Methodist Church, at Sixteenth and Pine; the Second Presbyterian, Taylor Avenue on Grand and Finney; the Jewish Congregations of the United Hebrew, and Shaare Emeth.

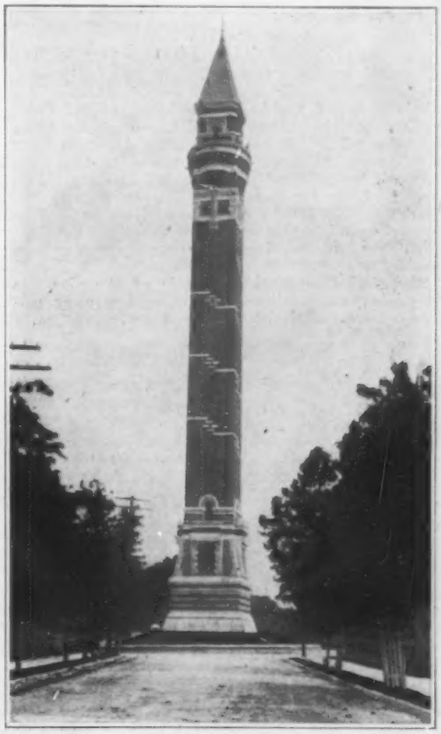
### St. Louis, the Premier Home City.

One of the most interesting features of a visit to St. Louis is a sightseeing trip through her many and magnificent private and semi-private residence sections. It is generally conceded that in the matter of beautiful homes she is second to none. A large number of magnificent boulevards, numerous driveways, and spacious parks, are prominent factors in promoting the welfare of St. Louis as the premier Home City. To the stranger the homes and home sections and home places are and will ever be a revelation. Especially is this true of the home "places," distinctly a local development of which there are a great many in the city, the rarest residence spots that the imagination can devise or skill execute.

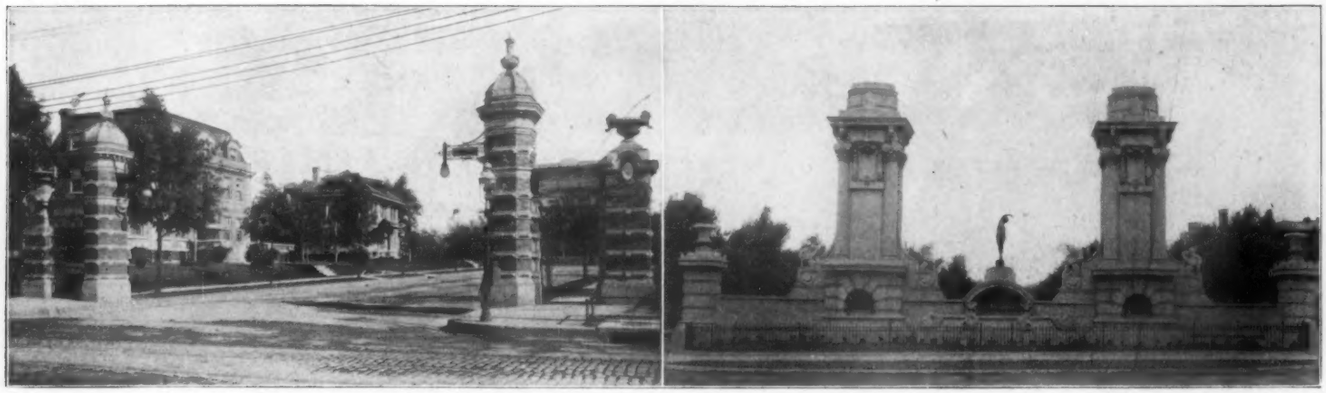
Unlike many other American cities the people



OLD WATER TOWER.



NEW WATER TOWER.



TYPES OF ENTRANCES TO ST. LOUIS' ELEGANT RESIDENT SECTIONS.

do not throng the downtown sections after business hours, but find their highest enjoyment either in their homes or at amusement places, conveniently located in the residence sections. Many of the theatres, practically all of the clubs, as well as other means of enjoyable pastime, are located far out from the city's wholesale and retail business districts. Some of the most brilliantly illuminated parts of the city at night are not in the downtown section, but in the residence sections.

St. Louis is an American city of the highest type. Her people are pre-eminently a home-loving people. The main spring of the city's prosperity, of course, is its commerce, but nothing will more forcibly impress the visitor with the prosperity of this great city than its palatial residential sections with its unusual number of elegant homes.

### St. Louis Schools.

The St. Louis public school system is one of the very best in America. It represents an investment for buildings, grounds and equipment of $15,875,591.78, or the equivalent of about $150 for every one of the 100,000 pupils. There are 120 schools in operation. The Soldan High School is said to be the most complete and fully equipped high school building in America, if not in the world. It cost $888,415.57. All the school buildings are fireproof and of modern design, embodying the latest ideas of hygienic and sanitary arrangement.

Washington University, one of the leading institutions of learning in this country, occupies a group of magnificent buildings just west of Forest Park. The buildings are recognized as forming one of the most successful and appropriate groups of collegiate buildings in the world.

St. Louis University, founded in 1823, is the oldest university in the city. The university with its parochial residence, house of studies for scholastics, and the beautiful church of St. Francis Xavier (the college church), one of the finest examples of Gothic architecture in America, form a group of buildings rarely equaled in any city.

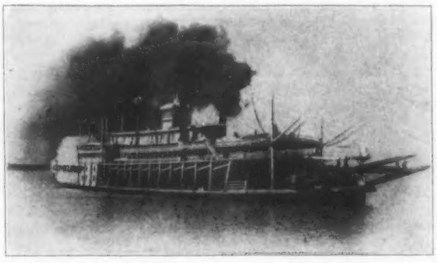
Forest Park University, just north of Forest Park, is one of the leading schools in the country for young ladies. A unique and interesting feature in connection with this school is the fact that for fifty years it has been continuously under one president.

The Catholic parochial schools of the city are numerous and excellent, and there are many private schools admirably equipped and managed.

Prominent among the educational institutions of the city not mentioned above are the Christian Brothers College, established in St. Louis over fifty years ago; the Academy of the Sacred Heart, the Visitation Convent, Smith's Academy, Mary Institute, Hosmer's Hall, Lenox Hall and the Manual Training School; the David Rankin, Jr., Trade School, for the education of boys in mechanical trades.

### A Trip on the Mississippi River

Since the days when the French voyagers laboriously cordelled their keel boats up the Mississippi River to the new trading post, the river has had a prominent part in the commercial and social life of St. Louis. For many years it formed the chief highway for freight and passenger traffic and is still an important factor.



"THE MACHINERY THAT CREATED ST. LOUIS."

The advent of the motor boat has opened up new pleasures to the people of St. Louis, and familiarized them with the beauties and advantages offered by the river of which our fathers never knew.

Numerous boating clubs dot the shores of the river from Carondelet on the south to Alton, 20 miles above St. Louis, and all through the summer season the handsome pleasure crafts with their glistening white cabins and varied colored flags, form a continuous procession before the city.

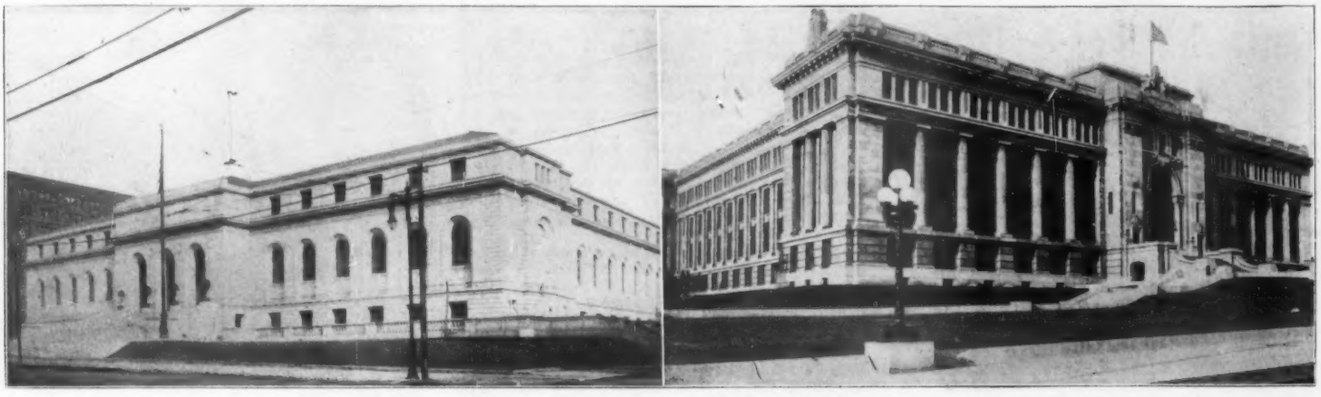
Mark Twain has said of the "Father of Waters": "We move up the river—always through enchanting scenery, there being no other kind on the Upper Mississippi. The water is a beautiful olive green. The majestic bluffs that overlook the river, along through this region, charm one with the grace and variety of their forms and the soft beauty of their adornment. The steep, verdant slope, whose base is at the water's edge, is topped by a lofty rampart of broken turreted rocks, which are exquisitely rich and mellow in color—mainly dark browns and dull greens, but splashed with other tints. And then you have the shining river, winding here and there and yonder, its sweep interrupted at intervals by clusters of wooded islands threaded by silver channels; and you have glimpses of distant villages, asleep upon capes; and of stealthy rafts slipping along in the shade of the forest walls; and of white steamers vanishing around remote points. And it is all as tranquil and reposeful as dreamland."

### The City's Water Supply.

With the spreading of population throughout the upper valley during the last century and the consequent growth of the cities and towns in the upper reaches of the river, the water supply of the city became a problem of ever-growing consequence. At first the sinking of wells and the repairing and preservation of springs was the important feature in the growth from a small town to a city. The water supply was largely taken from deep wells and springs, but this soon became inadequate and it was necessary to resort to the natural water supply of the great river. For more than 40 years there was an open and never-ceasing discussion of many filtration plants of various kinds and types with varying improvements and effectiveness.

Within the last 12 years the new St. Louis system of purifying the water supply was invented and installed. This consists of first pumping water from the river into settling basins, where it is chemically treated in such a way as to secure a water supply for the city which is superior to that which could be obtained from any natural spring, lake or river, and the solution of the water problem of St. Louis by scientific control has marked an epoch of progress in this important municipal development, which outclasses the achievements of any other city in this particular.

A large majority of American cities are located on banks of rivers and invariably their water supply is drawn from the adjacent stream, and the



ST. LOUIS PUBLIC LIBRARY AND MUNICIPAL COURTS BUILDING.

"BERKELEY"
Hydrated
LIME

SECURITY CEMENT AND LIME COMPANY — BERKELEY — PRODUCTS — BERKELEY, W. VA.

ASK YOUR DEALER

SECURITY CEMENT AND LIME COMPANY — SECURITY — PORTLAND CEMENT — SECURITY, MD.

"SECURITY" PORTLAND CEMENT

**Security Cement & Lime Co.**
**Main Offices, Hagerstown, Md.**

"AA" Means
"The Best That Can Be Made"

The reason that "CHICAGO AA" dealers continue to enjoy the largest share of the cement business in their respective territory, is due to the User who, during the past fifteen years, has had ample opportunity to acquaint himself with the superiority of this particular brand, and who uses it, in preference to all others.

Besides, we assist the dealer in marketing our product.

Write for full particulars and prices today.

**Chicago Portland Cement Co.**
*30 No. La Salle St., Chicago*

ST. LOUIS PORTLAND CEMENT WORKS — RED RING — ST. LOUIS BRAND

SALES OFFICE:
Liggett Bldg., St. Louis

THE
Standard Brands
OF
Portland Cement
Lightest in Color
Highest Tensile Strength
ALWAYS UNIFORM

Always the same high quality. Prompt shipment guaranteed at all times and made possible, as each mill is located within switching limits of the two greatest railroad centers of the West. You are assured of your orders being promptly filled.

KANSAS CITY PORTLAND CEMENT WORKS — KC CEMENT — KANSAS CITY, MO.

SALES OFFICE:
Long Bldg., Kansas City

MANUFACTURED BY
**Union Sand & Material Co.**

ST. LOUIS Liggett Bldg. | KANSAS CITY Long Bldg. | MEMPHIS Tenn. Trust Bldg

WETHRPRUFE

Open Mouth

WATERPROOF — WETHRPRUFE — TRADE MARK — REG. U.S. PAT. OFF.

Bates Valve

We make these bags in one-fifth barrel size cheap enough to use and strong enough to carry seventy-six lbs. cement to destination. ASK FOR THEM.

WATERPROOF

An Extra Heavy, Extra Strong
WATERPROOF PAPER BAG
For Cement, Plaster, Lime, Etc.

**West Jersey Bag Co.**
**Camden, N. J.**

# OTTAWA SILICA CO.
## Ottawa, Ill.

**Washed-Steam Dried and Screened**

# White Sand

Unexcelled for
- Facing Concrete Blocks
- Ornamental Concrete Stone
- White Plaster
- Roofing
- Exterior Plastering
- Sawing Stone and Marble, etc.

**Analysis 99.90%**

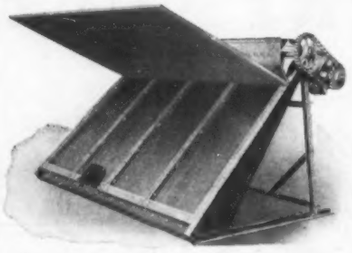
**Prices, Freight Rates and Samples on Application**

**Shipped in Paper Lined Box Cars or in 175-lb. Bags**

You can order less than a carload, in fact shipments as small as five 175 lb. bags can be delivered economically.

LARGEST SHIPPERS OF WHITE SAND IN THE UNITED STATES

# National Screen Separator



Will screen anything screenable.

Highest efficiency.

Guaranteed.

*Write for Booklet to*

**National Engineering Co.**
**525 Monadnock Bldg.**
**CHICAGO**

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER

ROBERT W. HUNT & CO., ENGINEERS

INSPECTION CEMENT & REINFORCING STEEL

CHEMICAL AND PHYSICAL TESTING

*Office and Laboratories*

Chicago New York Pittsburgh St. Louis London
Montreal San Francisco Toronto Mexico City Seattle

# WHITEHALL

PORTLAND CEMENT

**Whitehall Cement Manufacturing Co.**

**1722 Land Title Bldg.**
**Philadelphia**

# "Giant" Plaster Board

The HIGHEST GRADE Plaster Board made. Substitute for lath or wood sheathing. Impervious to heat or cold. *Fire* resisting. *Vermin proof*. Sound deadening. Does not buckle. Quick drying. Time saving. Size of board, 32″x36″.

## The "Giant" Plaster Board Co.
**Bridgeport, Conn.**

# Gravel Washing Plants

*Correctly Designed*

*Large or Small*

*For Maximum Efficiency*

## JAMES B. SEAVERNS, M. E.
**Peoples Gas Building, Chicago**

# THE SUMMIT SILICA CO.
**BARBERTON, OHIO.**

PRODUCTS: Steel Moulding Sand, Sand Blast Sand, Fire Sand, Core Sand, Concrete Material.

SHIPPING FACILITIES: Pennsylvania Lines, New York Central Lines, Baltimore & Ohio R. R., Erie R. R.

Our material is thoroughly washed and screened, insuring an absolutely uniform quality. Kiln dried by the very best process known in the sand business. Finest Equipped Mill and Best Material in the World.

PORTLAND CEMENT LIME PLASTER

## RICHARD K. MEADE, Mem. Am. Soc. Mech. Engs. Mem. Am. Inst. Chem. Engs.
**Chemical, Mechanical and Industrial Engineer**
**202 N. Calvert Street, Baltimore, Md.**

Plans and Specifications for Improvement of Old Plants or Construction of New. Inspection, Tests and Analyses. Advice as to Improvement of Product or the Economic Operation of Plants. Reports on Properties and Raw Materials.

# Buy Your Entire Equipment from One Concern—

from one set of drawings—built in one shop—keeping one set of records. The confusion resulting from any other practice is too well understood by those experienced in crushing and screening plant operation.

We carry this policy of "standardization" still further. All parts are reduced to the lowest possible number of sizes so that similar parts may be made interchangeable. This applies to sprockets, chain, buckets, screens, conveyor carriers, pulleys, shafting, and bearings. By consistently following out this policy, a great saving may be effected, not only in the number of repair parts necessarily kept on hand, but in the making of repairs, in the ordering of new parts, etc., and in making additions to the plant.

We maintain an engineering department thoroughly experienced in the design of gravel washing plants. We shall be glad to study your special conditions and make recommendations.

**Stephens-Adamson Mfg. Co.**
200 Ridgeway Ave., Dep't "F,"
AURORA, ILLINOIS
New York Chicago Pittsburgh St. Louis
Boston Los Angeles Vancouver

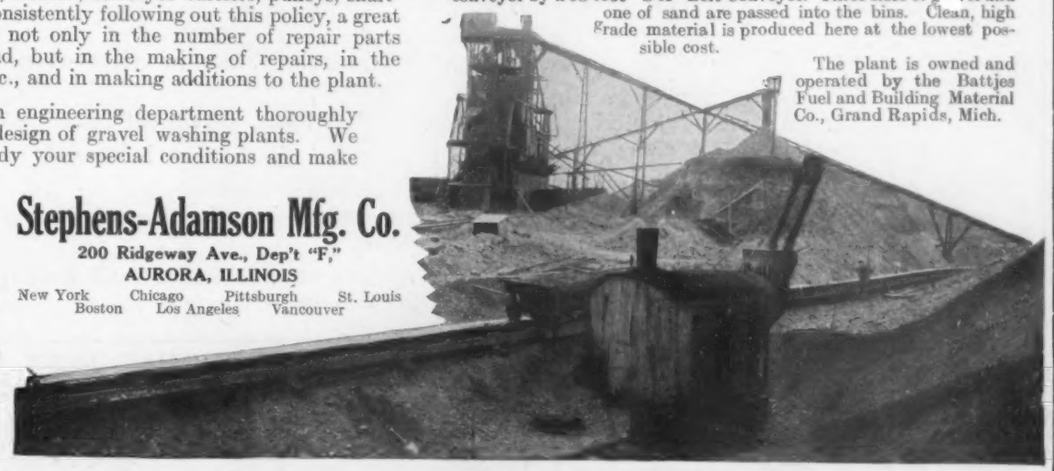
*The Labor Saver keeps you posted on modern methods. It gives you live, up-to-date news of modern methods of handling material, many actual photographs from the field and brief, accurate descriptions. Data of value to the engineer regarding the "S-A" line of conveying machinery.*

*A request on your letterhead will bring you all issues without obligation.*

## 250 "S-A" Gravel Washing Plants— All Successful

The plant illustrated below is one of many designed and built by us to meet special local conditions. Material is excavated by a steam shovel and delivered into a travelling hopper serving a 300-foot portable "S-A" Belt Conveyor. This, in turn, delivers to a 180-feet "S-A" Conveyor which elevates the material to the screens. Oversize, rejected by the first screen, is crushed and raised again to the main conveyor by a 98-foot "S-A" Belt Conveyor. Three sizes of gravel and one of sand are passed into the bins. Clean, high grade material is produced here at the lowest possible cost.

The plant is owned and operated by the Battjes Fuel and Building Material Co., Grand Rapids, Mich.



# THE SCHAFFER POIDOMETER

## DESCRIPTION

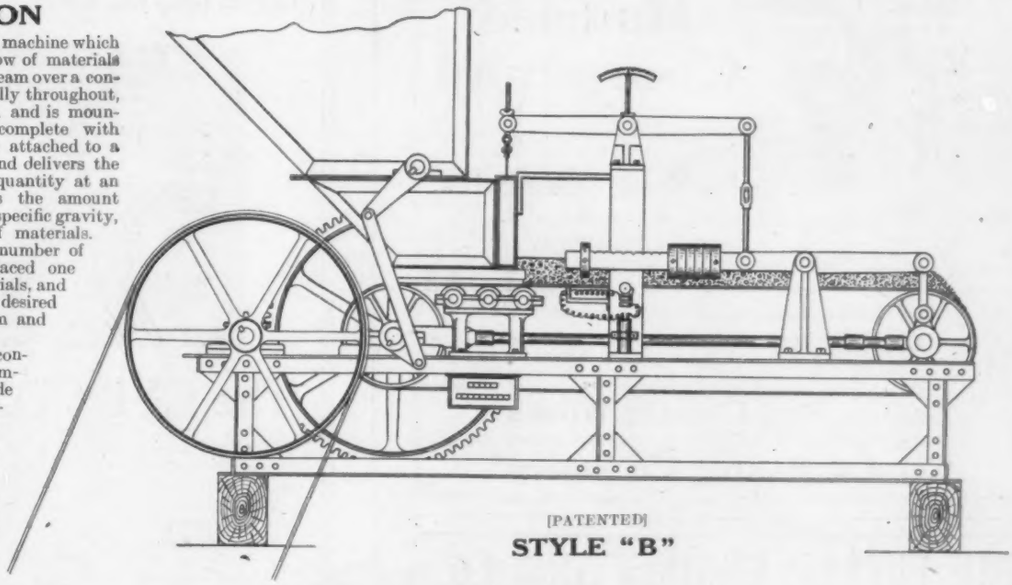
THE Schaffer Poidometer is a machine which weighs and regulates the flow of materials traveling in a continuous stream over a conveyor. It is built very substantially throughout, free from delicate working parts, and is mounted on a steel angle frame, complete with driving machinery. It can be attached to a hopper, bin or elevator spout, and delivers the material in any predetermined quantity at an even regular flow, and records the amount handled, regardless of changes in specific gravity, amount of moisture, or sizes of materials.

When it is desired to unite a number of different materials there is placed one machine for each of the materials, and each machine will deliver the desired proportions in a constant stream and insure an even mixture.

The machine is perfectly self-contained and can be set up immediately. It has a very wide range in capacity and can be readily adjusted, both for different quantities and also for a large variety of materials of different consistencies.

The wearing parts are limited in number and are of such a nature that they can be easily replaced. The poidometer is the result of many years of experiment with feeders and is proven a practical device.

This is only one of the links in the chain of **SEECO SYSTEMS.** A further inquiry will reveal interesting facts.



[PATENTED]
**STYLE "B"**

**SEECO SYSTEMS SECURE SUCCESS**

**THE SCHAFFER ENGINEERING & EQUIPMENT COMPANY :: TIFFIN, OHIO**

# REXALL

Double-Stitched

# BELTING

## Five Reasons Why "Rexall" Is Economical for Conveying, Elevating, Heavy Drives

1. We use a 36 ounce hard woven duck base, **the heaviest ever used in belting.**
2. We use protected inner stitches, so that **the plies cannot open up.**
3. We use a laminated construction, so that **the bucket bolts and fasteners do not pull out.**
4. We use a filler not affected by heat and cold, so that **Rexall Belting keeps pliable and does not get hard.**
5. We use a double rounded edge construction, so that **Rexall Belting withstands edge abrasion.**

WHY NOT INVESTIGATE BEFORE YOU BUY THAT NEXT BELT?

**IMPERIAL BELTING COMPANY, Chicago**

TRADE MARK.

PERMANENT and THOROUGH
Water-proofing of Cement Work
results from the use of

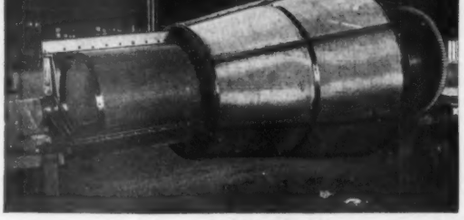
## Maumee Compound

SPECIFICATIONS AND SAMPLES ON REQUEST

**The Maumee Chemical Co.**
403 ST. CLAIR BUILDING
TOLEDO, O.

## WHY GO 'WAY UP IN THE AIR

with your bins and screens, and forever elevate your materials and pump your water to a needlessly expensive height?



## The CYL-CONE SCREEN

effects large reduction in heights of bins and elevators and makes important savings in costs of construction and operation for the modern sand and gravel washing plant.

All the washing and screening elements for perfect work in a single self-contained unit. Extremely simple in erection and driving.

Made to suit all materials and to separate into as many sizes as desired.

*Ask for our Catalogue No. 38*

**THE WEBSTER M'F'G COMPANY**

New York 88-90 Reade Street — **Tiffin, Ohio** — Chicago McCormick Building

51

**F. L. SMIDTH & CO.** 50 Church St. NEW YORK

SPECIALISTS IN

**Engineering Cement Works**
AND
**Cement Making Machinery**

## THE FULLER ENGINEERING CO.

**Designing, Constructing and Operating Engineers**
ANALYTICAL CHEMISTS
Cement, Hydrated Lime and Gypsum Plants a Specialty
OFFICES: Allentown Natl. Bank Bldg. - - ALLENTOWN, PA

same course of treatment for water supply that has been successfully installed in St. Louis would be applicable in very many other places which are similarly located and similarly conditioned. The development of the water supply throughout the city is accomplished by means of stand pipes which are contained in artistically designed structures, which are the subjects of our illustrations, and are notable landmarks for the recognition of visitors in the city.

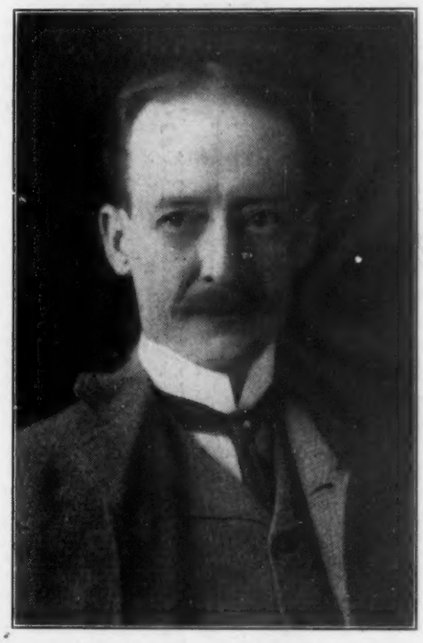
The sewage disposal of the city consists of a system of old-fashioned sewers of adequate size to deliver the polluted sewage into the river below the city. In this particular St. Louis is on a par with all of the other municipalities of the United States which have never done anything with their sewage disposal except to run it off to waste in the river, thereby again polluting the water through the original stream. The purification of the water supply has been perfected here by efficient and intelligent control but the use of sewage disposal has been entirely neglected, not only here but in all the other cities of the country. European cities have far excelled us in this respect, for many of their sewage disposal plants have proved extremely profitable from a monetary standpoint, aside from the fact that enormous profits of conservation have also attributed to the elimination of the worst type of perpetual nuisance, namely, the pollution of natural streams.

* * * *

In all this great development the builders' supply people of the Mound City have figured extensively. The amount of materials being used is incalculable. Brick, lime, plaster, cement, sand and gravel, stone and all the various mediums of construction seem to have found here an insatiable demand and the type of residences, store buildings, etc., being constructed are designed to bring out all that is good and all that is artistic in the kinds of material used.

In the builders' supply business of St. Louis there are many who entered the industry when fireproof and other non-combustible building materials first made their qualities manifest—men who are still at the helm of great organizations and whose progressive ideas, constant push and energy have to do very largely with the growth of the city generally and in the building line in particular. Among these gentlemen of the first rank may be mentioned Frank P. Hunkins and Gordon Willis, of the Hunkins-Willis Lime & Cement Company, with offices in the Century Bldg., and with yards distributed throughout the city. Mr. Willis in speaking of the growth of the building material industry said:

"The Hunkins-Willis Lime & Cement Co. was organized in 1875 for the purpose of handling hay, grain and feed, and I believe it was 10 years after that before any attention was paid to handling building materials, and then the stock was only of a limited extent. I recally that an order was



GORDON WILLIS, HUNKINS-WILLIS LIME & CEMENT CO.

COL. C. W. S. COBB, GLENCOE LIME & CEMENT CO.

placed for 50 barrels of Diekerhoff German Portland cement. At the time it was a question as to when we would be able to dispose of this very heavy supply.

"From that time the handling of building materials increased very rapidly and it was not long until we had entirely dropped the handling of hay, grain and feed. About this period there was one other firm started, which firm is still in existence. That was the Glencoe Lime & Cement Co., in which company we are largely interested. Our business has grown 'by leaps and bounds' ever since that day until now it is an important industry in the city of St. Louis. It is a distinct and separate business in itself in the handling of cement and other building materials.

"There are in this city about six large concerns and a dozen or more smaller interests. The larger concerns have distributing yards and warehouses in various parts of the city located in accordance to the delivery distance. In the pioneer days the business was conducted very much the same as at the present time and I can see very little difference in the methods used then as compared with the present. Possibly a more correct business system is followed now than at first—which, however, would be applied to any other line of business as well as the building material industry, and we have seen the time when lime was practically the only material for mortar. Later on the use of what are termed 'common cements' were manufactured under the brands 'Louisville,' 'Utica,' and 'Milwaukee.' This class of cement was used almost exclusively in all building work, but gradually the imported Portland cement replaced common cement and later the imported brands were almost entirely succeeded by the use of American made Portland cement, due at first to the market price, and at the present time we believe that the demand for American goods is such that at an equal price it would have preference over the imported brand.

"We have seen lime mortar for plaster purposes replaced by what are termed 'hard mortars,' of which there are many brands now on the market. We believe that we are the pioneers in the introduction and use of hard mortars in the United States. Two or three of the most prominent brands were first introduced and sold by us to the public. The brands were 'Acme' cement plaster which now is a standard article; 'Rock Wall,' another well-known brand, was, we believe, started in our office. We were the first to handle and distribute 'Adamant' wall plaster west of the Mississippi River.

"Another feature of the building material dealers' business is the fact that in recent years almost all of the leading concerns are handling various articles used in the construction of buildings that were formerly handled by dealers in other merchandise. For instance, beams, metal lath, reinforcing steel, dampproofing materials, cold water paints, fireproof doors, metal windows, iron sash and many other articles are now handled regularly by some of the builders' supply dealers.

"With regard to methods of present day delivery as compared with the past; we believe that more prompt, safer and better deliveries are required now than heretofore. The methods of delivery are practically the same except for the introduction of the power truck, which is rapidly coming into general use. The hauls are longer than in former days, due to the increasing size of the city. This is overcome by the local yards. Such low-class commodities as cement, sand and gravel will not bear expensive methods of handling in the way of long distances and therefore warehouses and yards located at proper distances are, we believe, the best means of reducing expensive delivery.

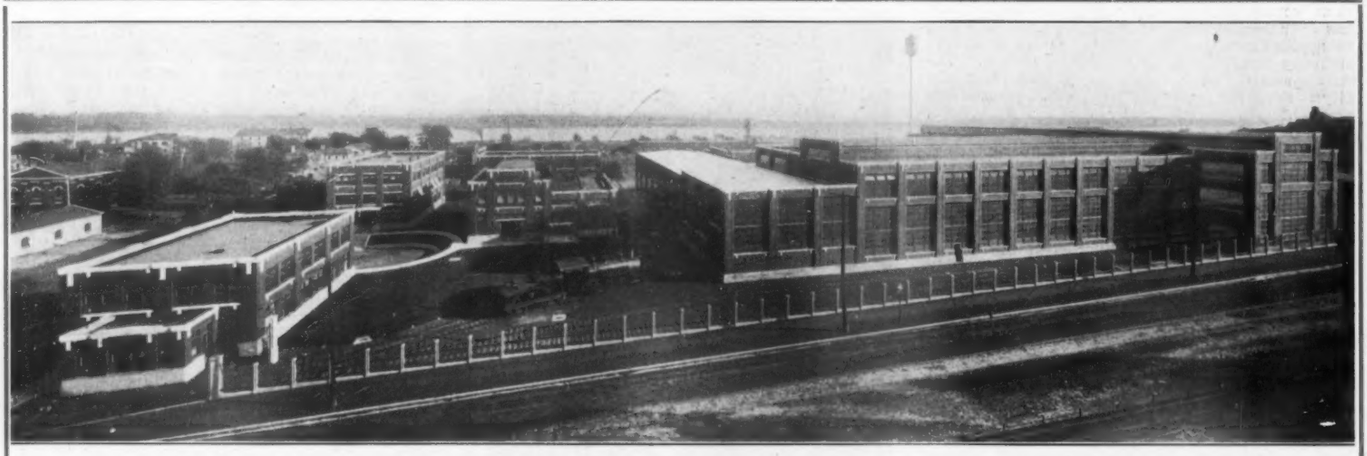
"The lien law is undoubtedly advantageous to the dealer. There has been considerable agitation and some organization done in regard to changing the lien laws but nothing as yet has been accomplished in that direction.

"The types of construction now are of stone, steel frame and reinforced concrete and it is only in the past decade that buildings now comparatively old are being torn down for modern structures. As I look out of my window I can see buildings that were thought to be wonderful types of building construction a few years ago, but now are obsolete and ready to be torn down. The construction of buildings is as much changed in the business building today and business building of 30 years ago as it is to the modern home and the log cabin home. We think we have got the last word in building right now, but I presume that in another 10 years the then buildings will materially eclipse the modern skyscraper of today. With the modern improvements in construction and the advance in the interior decorations and trim that go with it, a building built 15 or 20 years ago becomes 'unrentable.' By this I mean that the rent will not pay interest on the investment and taxes. We find this the case all over the United States and the past will show that office buildings erected in 1885 in New York City which were considered the finest of office structures at that time are now being removed for the purpose of erecting modern office buildings, and this action is due entirely to the cause above stated.

"St. Louis has long been noted for its beautiful homes and I believe that there is but very little additions in the better class of homes as compared to those of 10 to 20 years ago, except in some of the interior improvements. Sanitary plumbing and perhaps the interior decorations are a little better, but in other features the construction is about the same. The greatest improvement is in the form of apartment buildings, in which there has been a very large increase in the number and are constantly growing. It is quite apparent that this form of home is popular. Lime is growing in popularity for the purpose of waterproofing.

"Business conditions have been very much affected in St. Louis and this section of the country due, for one reason, to the disturbed condition of the action of the state of Missouri towards insurance companies, which has fortunately been satisfactorily adjusted to both sides."

FRANK P. HUNKINS, HUNKINS-WILLIS LIME & CEMENT CO.

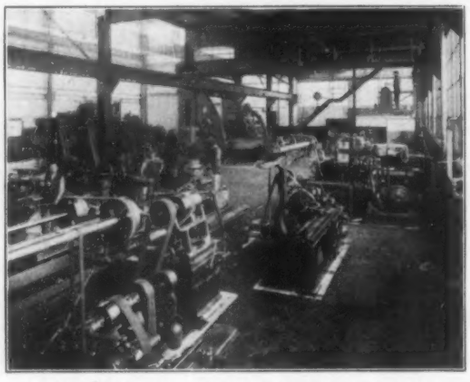


NEW PLANT OF BUSCH-SULZER BROS.-DIESEL ENGINE CO., ST. LOUIS, U. S. A.

American Builders of

# The Diesel Engine

MOST ECONOMICAL PRIME MOVER KNOWN.



A CORNER IN ONE OF THE MACHINE SHOP BAYS

Runs on crude or cheapest grades of fuel oil.

Reliable for any service.

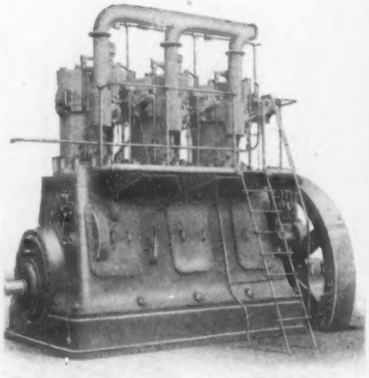
Over 70,000 horsepower of Diesel Engines have been built by us, installed and are in successful operation in power plants of numerous industries in 26 states.

Besides cement plants these include flour, woolen, cotton and paper mills, phosphate and copper mines, iron works, marble yards, silverware, clock, piano, automobile, ink and chocolate factories, irrigation and water works, breweries and ice plants, electric light and power plants, locomotive works and railroad shops, battle ships and torpedo boats, navy yards and other government works.

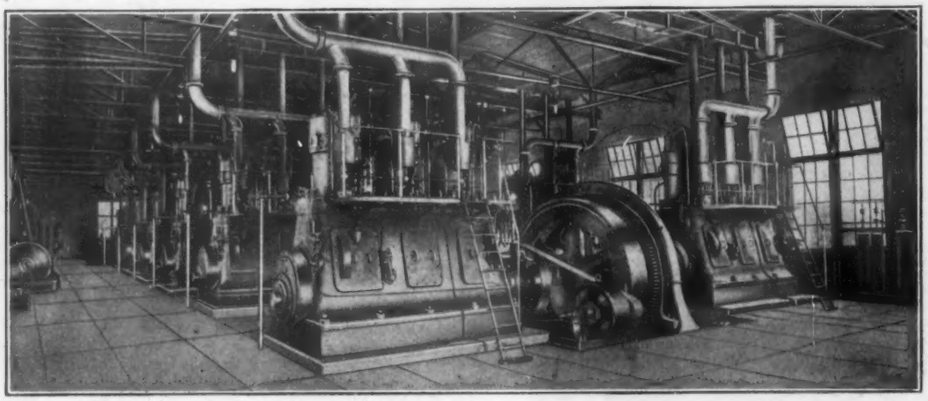
VIEW ON GROUND FLOOR OF THE PATTERN SHOP

Everywhere installed the Diesel has made a record for economical operation no other kind of engine has been able to equal or even nearly approach. Let us send you bulletins and refer you to other Diesel Engine users for proofs.

## Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, U. S. A.

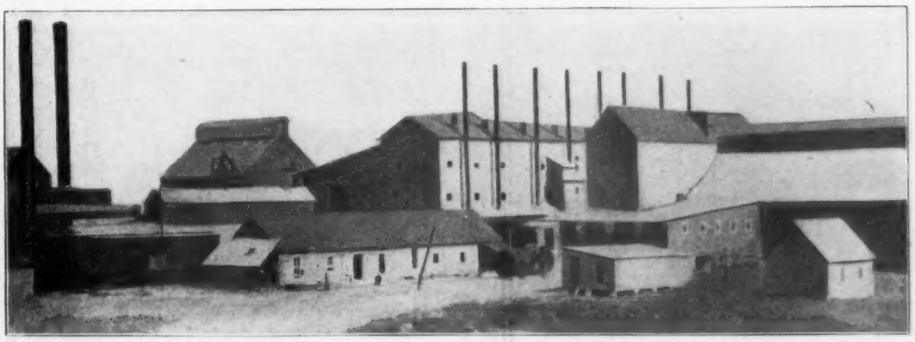


225 BRAKE HORSEPOWER DIESEL ENGINE—TYPE A—3—75



BATTERY OF 16 DIESEL ENGINES FURNISHING POWER FOR PLANT OF THE PRAIRIE PEBBLE PHOSPHATE CO., MULBERRY, FLA.

Tell 'em you saw it in ROCK PRODUCTS



PLANT NO. 2. KEENE'S CEMENT PLANT OF ACME CEMENT PLASTER CO., ST. LOUIS. CAPACITY 10,000 TONS PER ANNUM.

### ACME CEMENT PLASTER CO.

No sketch of the building material interests of St. Louis would be complete without a brief description, at least, of the great Acme Cement Plaster Company, whose head offices are located in the New Bank of Commerce building. About thirty years ago the cementing value of gypsite, which was then little known, began to be commercialized and a few years later at Salina, Kansas, one of the first plaster mills of the West was started and the Acme Cement Plaster Company was formed. The new product was little understood and the offices of the concern were moved to St. Louis and increased in size and importance.

About the same time a plaster plant was started down in Texas, known as the Lone Star Plaster Company, and to this point the operations of the Western plaster industry were removed. Several active men of those times made more or less progress in the perfecting of the plaster business, but it was not until Samuel Lazarus, a wealthy stockman and railroad builder and operator, who is a recognized leader of men in commercial affairs, took hold of the concern that its real prosperity and expansion began. Under his guidance the head office of the company was established in St. Louis in 1899 and the equipment of the plants was improved so as to make it efficient and economical in operation, and the quality of the product was carefully studied so as to produce the highest attainable line of plastering materials.

The best proof of the wisdom of these improvements is to be shown in the substantial and steady growth of the tonnage produced by the company, as the reflection of the demand for their goods created by the satisfaction of the using contractors and others who are the customers of the dealers handling the company's product.

James Dougan is the manager of sales of the Acme Cement Plaster Company and is widely known and popular on account of his own attractive personality and the high commercial lines of his sales policy as known to thousands of customers throughout the wide territory of the company's operations. More than a dozen mills produce the products of the Acme Cement Plaster Company, the largest being at Acme, Texas, which produces 125,000 tons of Acme cement plaster per annum. Other large mills are located at Fort Dodge, Iowa; Grand Rapids, Mich.; Acme, Okla.; Laramie, Wyo.; Los Angeles, Calif., and numerous other places where the raw materials abound and delivery facilities exist for the economical handling of the product of the mills.

Under the guidance of Mr. Lazarus the gypsum and gypsite products of the Acme Cement Plaster Company have been so improved as to leave nothing wanting to fill the most exacting specification that the designing architect can incorporate into his requirements. These comprise materials specially prepared for the brown or first coat as applied on wood lath, metal lath, plaster tile, brick, stone and concrete surfaces—and, in fact, every possible surface which may require plastering—and to this prepared white finishes without using any lime whatever have been supplied to cover the brown or base coat.

Wood fibre plaster to be used with sand or without sand, ornamental plasters for wainscot and other decorative purposes, molding plasters suitable for the highest decorative purposes and plaster designed for making castings, which is one of the most important uses of plaster in the fine arts; dental plasters for filling teeth, and in fact the highest grade of every call for a plaster which is known in the building trades or in the arts, are manufactured by the Acme company.

Acme Keene's cement is a superior white Keene's for high-grade work such as fine finish columns, pilasters, wainscoting, bases, moldings, cornices, beading, figures, cast work and all similar work where extremely hard materials and smooth surfaces are desired. Acme Keene's cement is a recognized superior product by those who use it most.

ENGINE HOUSE OF ACME CEMENT PLASTER CO., ACME, TEXAS.

The promotion department of the Acme Cement Plaster Company has carefully prepared complete working directions for the most intelligent use of all kinds of plaster products and a strict following of the instructions so prepared by the Acme Cement Plaster Company will undoubtedly secure to the user that kind of perfect work which is a lasting satisfaction wherever their material is used. This intelligent promotion of the use of plaster, together with the cautions against bad practice in applying the goods, has been no little factor in the progressive upbuilding of the company's phenomenal growth and the ever-widening, successful market.

During the past 12 to 14 years the improvement of the plants and the study of their economical operation has been one of the important features of the company's operation. Leo Jacobs, vice-president, in charge of operation, has had personal charge of the construction end and the mechanical development, as well as the plant management. Mr. Jacobs remarked that every time there is a new mill to be built or an old one to be overhauled, he puts his best efforts to make it the best mill of the lot; and his mechanical bent is constantly working on new lines of materials, better development of the properties and more efficient economies, in keeping with the high grade of products which the company's reputation demands.

The unity of purpose and the compactness of the organization of the Acme Cement Plaster Company are recognized factors of its success, and the cordial greeting of the sales department to the customers who handle plaster materials is the corner stone of its continued progress.

* * * *

Throughout the wide territory dominated by the commercial importance of the city of St. Louis mineral oil abounds, and in many places is the cheapest attainable fuel for industrial purposes, and it is quite natural that the Diesel oil engines, manufactured by the Busch-Sulzer Bros.-Diesel Engine Company, should take the most important place as initial motive power producers. In fact, the Diesel engine is practically the only oil-burning machine that is worthy of consideration by those who want motive power at the minimum cost of production.

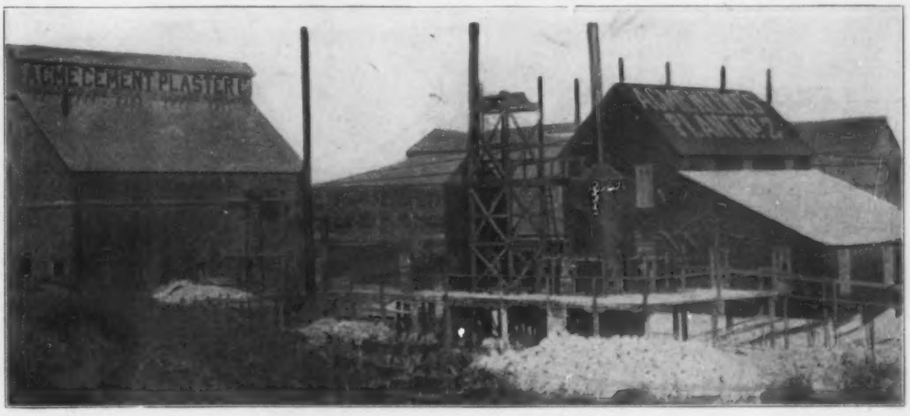
In this connection Samuel Lazarus, of the Acme Plaster Company, says:

"Our power plants are equipped with Diesel engines, the most economical power producing engines, we believe, that are built anywhere in the world today. We have one in our plant at Acme, Oklahoma, of 170-brake horsepower and two of 225-brake horsepower each in our plant at Acme, Texas. The drive at the Oklahoma plant is mechanical; that at the Texas plant electrical, each engine being direct connected to a 150-K. W. alternating current generator.

"Both plants are operated on a 24-hour schedule, six days a week, no work being done on Sundays, or from midnight Saturday night to midnight Sunday night. Never since we installed the Diesel have we had to shut down on account of engine troubles. They carry this steady mill load—and it's a full load, too—without causing the least trouble; and the longer they run, it seems, the more smoothly they operate. For our business they have got a steam engine beaten the traditional seven ways as to reliability.

"Water around a gypsum mine is always bad for boilers, causing them to give constant trouble and necessitating frequent shutdowns—and this was always the worst in the busiest season when we threw on the heaviest and most constant load. It was to avoid this constant boiler trouble that we decided to install Diesel engines—this and the fact that we were convinced of the Diesel's superior operating economy. Since installing Diesel engines we have been going right through our heavy seasons, extending over a period of about 10 months yearly, without ever having to shut down once.

As for economical operation of the Diesel, in our opinion there's nothing to touch it. We get 100-brake horsepower hours right along on about six gallons of fuel oil and the amount never runs over 6.2 gallons. Besides, it doesn't require as many men to operate as a steam plant. There's no




PLANT NO. 3. ACME CEMENT PLASTER CO., MARLOW, OKLA.: CAPACITY 20,000 TONS PER ANNUM.

handling of fuel, therefore no firemen and no ashes or cinders to be taken away, requiring other labor. We have our fuel oil delivered into storage tanks directly from the tank cars whence it runs by gravity, no labor for fuel being required. It is delivered to the engine cylinders by a fuel pump on the engine, operated by a cam shaft driven from the main shaft of the engine, and the amount of oil delivered is regulated by a sensitive governor actuated by the load on the engine and so balanced that only just enough oil is delivered to take care of the drag of the load on the engine at the moment.

"Then on Sundays when we shut down we don't have to bother with banking fires to be ready to start again. When we want to start up we simply throw over the starting lever, which turns the compressed air from the compressed air storage tanks, which are a part of the installation, into the engine cylinders. As soon as the engine comes to speed, which it does in a few seconds, the air is shut off and a twist of the wrist turns on the fuel oil and the engine is ready for business. It never takes our engineers more than one minute to have their engines ready for full load after starting cold. Thus, you see, by using the Diesel we cut out all power plant stand-by losses.

"Then, we don't have to have as large a power-house for the Diesel as for a steam plant, and no stack at all—quite a saving in that sort of expense. Then there are other points favorable to the Diesel we might discuss, but suffice is to say that we believe it to be the best and most economical engine a man can put in his power plant—a step as far ahead of the steam plant as steam was a step ahead of the old windmill."

With such indorsement from such high authority, based upon experience in the operation of a large number of Diesel engines, it seems to be true that these machines are the last word with regard to initial power producers as far as ultimate economy is concerned in the calculation of cheapness of basic horsepower unit.

* * * *

Several years ago the Hunkins-Willis Lime & Cement Co. adopted a uniform pattern of delivery wagon and a uniform color for all their horses and mules, so that one of their teams is recognizable as a trade mark. The color is dappled gray. Our illustration shows a typical team, wagon, and load of Atlas cement, which are familiar parts to many a building scene. Frank P. Hunkins says that he considers their team equipment much more efficient and dependable than auto trucks, which they have already give a thorough trial. He loves a pretty horse and is fond of the slick, well-groomed dappled grays that have made good in his service.

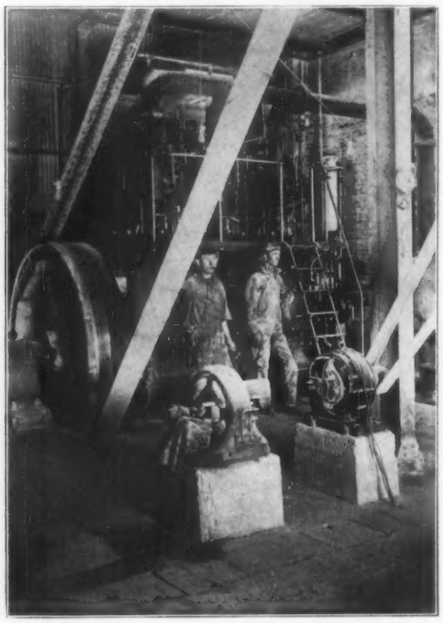
While in this office recently the writer witnessed a three-cornered telephone conversation, in which Mr. Hunkins, Mr. Willis and D. S. Hunkins, better known by those who love him as "Bud" and who is manager of the splendid Peerless white lime plant some 30 miles out of the city participated. All three participants were full of business, and it amounted to a personal interview all around. Mr. Hunkins, Jr., is one of the young men of the industry who is making his record by the route of earned runs—and a big record at that.

* * * *

The Glencoe Lime & Cement Company first became an active factor in the production and sale of lime almost thirty years ago. Col. C. W. S. Cobb has always been the presiding genius. He is a man of sterling qualities, of wonderful enterprise and ability. He came to St. Louis from Maine, and of a family of lime burners extending back for just about a century. In fact, one of the elder Cobbs back in Maine probably burned and ground the first "English" or Portland cement on the Western Hemisphere. In this case an upright lime kiln was used for the calcining process, which is still standard at the old lime works.

Col. Cobb grew up in the lime business and brought with him to the first Glencoe quarries to be opened a long line of experience to begin with. Glencoe hydrate, the only hydrate manufactured in St. Louis, was introduced four years ago as a new product. Practically all of the lime burned from the rock in the immediate vicinity of St. Louis has been termed "black" lime, because it has a dark color in the lump form.

Glencoe hydrate is derived from this type of rock, and has a light buff color when hydrated, and is very pure calcium with slight hydraulic qualities. This hydrate when mixed with a small quantity of cement makes a very high grade of masonry mortar, and when used for finishing gives a smooth rich buff tint resembling the color and texture of rubber French Caen Stone which is so much sought after by the ultra aesthetic taste in artistic work.



DIESEL OIL ENGINE AT MARLOW, OKLA.

Fibred Glencoe hydrate is a product for first coat plastering, made by mixing hair into the hydrate by machinery, when it is ready for sanding and mixing with water. It is a very high-class product carrying four and even five or six parts of sharp silica sand to make a strong first coat for two-coat work. Ever in the lead with every improvement, the Glencoe Lime & Cement Company some two years ago equipped one of their lime plants with the most modern type of gas producer.

Philip Doernheim, the general manager of all the company's plants, says that there is no question about the final economy of the gas producer in lime burning. He has introduced an improvement in the burning feature himself by the use of a steam jet playing into the combustion zone of the kiln. Mr. Doernheim has been in the lime business in St. Louis from boyhood, having grown up with the old Goetz lime concern, which was consolidated with the Glencoe company several years ago.

Besides the manufacture and marketing of their own lime and crusher products, the Glencoe company does a very extensive business in general builders' supplies. They handled the biggest single plaster order ever sold, that for the Railway Exchange building. It was all Acme cement plaster and is best described as "thirty acres of ceiling and three times that much of walls." That was some delivery, taking several months, but it moved along with the regularity of clock work from mill to car and car to job by team, and the big job was never short of material for a minute.

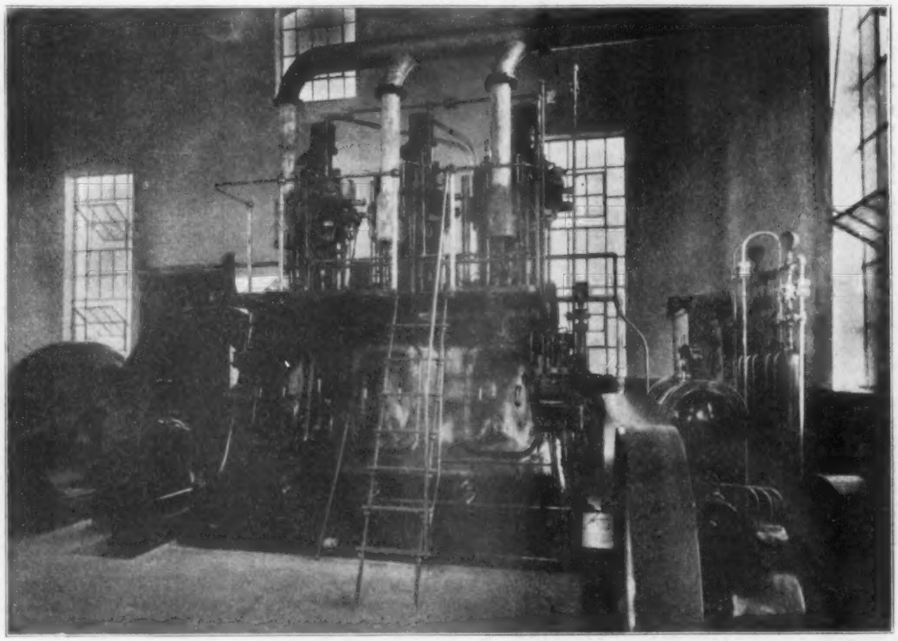
The general and executive offices of the Glencoe Lime & Cement Company are located at 915 Olive St., with several warehouses and yards having adequate trackage facilities located conveniently for making prompt deliveries of materials in the best building sections.

* * * *

The younger generation has not been unconscious to the opportunities of the building material industry, a notable instance of this being the Independent Lime & Cement Company, located at Vandeventer Ave. and Market St. This concern is presided over by E. O. McDonnell, who is secretary, treasurer and general manager. Mr. McDonnell is a type of the up-to-date, courteous and aggressive young business man of today and the remarkable success of this concern is the direct result of the progressive methods and the quality of the material handled by the Independent company.

The Independent Lime & Cement Company was organized in 1910, since which time it has enlarged its business very materially in the materials which go into the construction particularly of homes and business blocks. It handles the products of the United States Gypsum Company, "Oriental," "Acme" and "Agetite" plaster and the "pyro bar" partition tile manufactured by the United States Gypsum Company. The concern also sells "St. Genevieve" lime, "Atlas" Portland cement, sewer pipe, wall coping, flue lining, etc. E. O. McDonnell, general manager of the concern, reports that business has been about the same as last year, possibly a little better. Owing to insurance misunderstandings on the part of the state of Missouri and the insurance companies, the amount of business in builders' supplies in St. Louis was not as great as it would have been otherwise. Not quite as much lime has been disposed of by the Independent company as other materials; however, the volume of business in this commodity has been as great as that of last year.

The Independent Lime & Cement Company sells direct to the contractor and has recently furnished the materials for the Southern hospital, the lime used being both hydrated and in the lump form. The majority of contractors prefer the hydrated form of lime to the old time lump lime. The concern, however, has a substantial business in either kind. A smaller quantity of work has been noted



INITIAL POWER UNIT ACME CEMENT PLASTER MILL, ACME, OKLA., BUILT BY BUSCH-SULZER BROS.-DIESEL ENGINE CO., ST LOUIS.

by the concern, but that which has been done is considerably more profitable.

A good demand for plaster board has evidenced itself during the past year. The company has a new material on the market known as "Reinforced Plaster Board" which is manufactured by the Plastic Products Company, fifteenth floor of the Central National Bank Bldg., 7th and Olive Sts., St. Louis, Mo. This reinforced plaster board has a double corrugated base reinforced by wire every three inches. This material has several advantages in the way of its fireproof qualities, its light weight and its adaptability for being put on walls and ceilings, and it is said that plaster after being applied to "Reinforced Plaster Board" lath will not crack or buckle.

The Independent concern also handles Woodville hydrated lime and Keene's cement. Mr. McDonnell reports that not many large contracts are on hand at the present time although his concern will furnish lime and plaster for the Children's hospital, which will take a large amount. The company believes it has been getting better prices than most places similarly situated in the country. The officers of the concern are E. O. McDonnell, secretary, treasurer and general manager; P. Goeddel, president, and John H. Newport, vice-president.

* * * *

The Contracting & Supply Company, which is an affiliated concern with the Contracting & Supply Company of St. Louis, is another of the building material concerns. The offices of the company are located in the Odd Fellows building, between 8th and 9th Sts., on Olive St. The products handled are "Arrowhead" lime, manufactured by the Arrowhead Lime Co. The cements handled are "Continental," "Red Ring," "Atlas" and "La-Farge Non-staining" cement.

The company reports the demand as somewhat off color at the present time owing to the lesser amount of building which has been going on during the fall. However, the concern is looking for considerable more business in the immediate future. Conditions already point that way for the reason that there has been a considerable increase in the plans for proposed building.

The "Arrowhead" brand of lime derives its names from the Cliffdale Lime Company. Prior to the latter part of April the Contracting & Supply Company only owned 6 per cent of the Cliffdale plant, but now it owns the entire plant, which is located at Brickeys, Mo., on the Frisco railroad, Memphis division, 50 miles from St. Louis. The warehouse of the concern is located at Park Ave. and Lawrence St. The officers are John Schmoll, president; Charles Brunk, secretary; Henry Hartman, Jr., treasurer, and M. J. Reinagel, assistant treasurer. The firm has been organized about 10 years and the stock is owned principally by contractors.

* * * *

The St. Louis Supply & Equipment Company, Central National Bank Bldg., St. Louis, Mo., handles reinforcing bars for concrete construction, metal frames for windows, fire doors, metal lockers, etc. Conditions have been very good with this concern, which does a national business. A substantial amount of the call for the products of the St. Louis Supply & Equipment Company has emanated from the West and Southwest, where a good future demand is noted. In this section of

PHIL J. DUERNHEIM, GLENCOE LIME & CEMENT CO.

the country there has been record-breaking improvements made in all lines and especially in the building line, and there is still a great deal to be done down there.

Particularly in the Southwest has there been a steady call and it is thought that the opening of the canal will substantially enlarge this particular district and bring about a very great development there. The plants of the St. Louis Supply & Equipment Company are located at Kansas City, Mo., and Gary, Ind. Oliver J. Grace is president, treasurer and general manager; Bernard D. Grace is vice-president and Robert C. Jones is secretary.

* * * *

The North St. Louis Building Material Company, 6400 Florissant Ave., reported to the representative of ROCK PRODUCTS that the demand for building materials and general conditions have been just about the same as last year. The company handles a general line of builders' supplies, including lime, cement, sand and gravel, plaster, wall coping, etc. Lime is handled in barrels. The "Red Ring" brand of cement, manufactured by the St. Louis Portland Cement Company, is handled by the concern and has found a steady market for the same.

Another of their products is "Acme" plaster, and president Richard D. Wall, of the North St. Louis Building Material Company, believes that the prospects for the call of this plaster are as good or better for next year as it has been in the past.

Mr. Wall stated that he is in perfect harmony with the present administration and is ordering material in large quantities. He holds quite an optimistic view of general business conditions for the future. The firm is composed of the Wall brothers, Richard D., president, and A. G. and P. H. Wall.

* * * *

Acorn Feed, Sand and Coal Company, 5381-83 Easton Ave., composes one of the body of handlers of builders' supplies through its sale of sand to contractors and others. "Conditions have been pretty good with this concern," said A. Beine, president and general manager. "Our sales have been above those of last year although we could not complain of the business done in 1912. The number of buildings are somewhat under those of last year. Insurance troubles had to do extensively with the decrease in number. This matter, however, has been settled to the entire satisfaction of all concerned and the business outlook is better for the coming year, although I believe that building will be held up generally until next spring." The officers of the Acorn Feed, Sand and Coal Company are: A. Beine, president and general manager; A. Beine, Jr., vice-president, and F. Pecher, secretary.

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The Banner Sand and Hauling Company, 152 Sydney St., through its general manager, P. H. Arbogast, reports conditions pretty fair during the past summer, although the total amount of business done in 1913 does not materially surpass that transacted last year. The concern handles sand and gravel and cement. In the latter commodity the "Atlas," "Red Ring" and "Continental" brands are sold, the demand for same being quite good. Geo. P. Johannes is president and proprietor of the Banner Sand and Hauling Company, Mr. Arbogast acting in the capacity of general manager.

* * * *

Allhoff Brothers, Easton Ave. and the Terminal, are handlers of sand and gravel and also cement. The company has noted a fair sale for its materials but reports that conditions were somewhat dull during the summer months on account of insurance matters, which have subsequently been settled up to the satisfaction of all concerned. The Allhoff concern transacts its business mostly with customers out in St. Louis county. The "Continental" brand of cement is sold by the concern. S. A. Allhoff is proprietor and general manager.

* * * *

E. H. Schwartz, 6329 Clayton Rd., is proprietor of the progressive concern bearing his name which is located in the outskirts of the city. Mr. Schwartz reports business conditions very fair in the past year, his sales being substantially larger than those of the previous year. He does not expect any sensational increase in the amount of business done in general but believes it will be on a conservative basis. Mr. Schwartz has lately furnished sand and gravel for Hillcrest, Southmore and Clayton Heights stores and also stores on Franklin Ave. and Billion Ave.

* * * *

August Court Company with offices in the Fullerton Bldg., St. Louis, Mo., are manufacturers' agents of building supplies, and the materials which it represents in the building lines are those of the Variety Manufacturing Company, of Chicago, in underwriters labeled elevator doors, fire doors and cross horizontal folding doors; hollow fireproof

LIME PLANT AND HYDRATING MILL OF GLENCOE LIME & CEMENT CO., AT MINCKE, MO.

A DELIVERY WAGON OF THE HUNKINS-WILLIS LIME & CEMENT CO., ST. LOUIS, MO.

tile of the Chicago Fire Brick Company; roofing tile, manufactured by the Cincinnati Roofing Tile Company and the National Roofing Tile Company; a floor hardening material known as "Metalcrete," manufactured by the Klein Manufacturing Company, of Cleveland; "Mackolite" gypsum tile and plaster board of the A. B. Fireproofing Company, of Chicago; metal lath, manufactured by the Edwards Mfg. Co., of Cincinnati; also metal lumber and cellular metal; concrete chimneys, manufactured by the Weber Chimney Company, of Chicago; spiral conveyors and conveying machinery, manufactured by the Minnesota Manufacturers' Association, of St. Paul; cold storage doors of all kinds, manufactured by the Jones Cold Store Door Company, of Hagerstown, Md., and baling presses, manufactured by Logemann Bros. Co., of Milwaukee. Mr. Court states that building conditions in St. Louis have hardly been up to standard in the past few months, the contractors having little figuring on hand, but he believes that a substantial change in conditions will obtain in the very near future.

* * * *

The Wittker Hardware & Contractors' Supply Co., 2346-48 North Market St., has been transacting business in St. Louis for over 30 years, succeeding in 1904 the Brinkmeyer Hardware Co., a corporation of which J. C. Brinkmeyer was president and G. A. Wittker secretary. The purpose of the company when starting in business was the sale of builders' hardware to contractors, but in later years there being no dealer in St. Louis selling sewer pipe to plumbers that material was added.

The company has enjoyed a prosperous business since its formation in both these lines. It makes a specialty of employing men who understand their business and lately closed a contract for builders' hardware which totaled about $10,000 for one building. It has furnished sewer pipe in great quantities for a number of public sewers.

Still later on cement, flue lining and wall coping were added to this line to meet the demand of bricklayers and concrete men, and the company is now handling these materials by the carload. Mr. Wittker states that business with his concern has not been quite as good this year as last. There seems to have been some depression in the building industry which, he believes, is mostly due to the high rate of interest which the money market requires (banks do get independent in such cases) and the consequent difficulty of making loans. He states that a great many of the buildings now being put up are financed by real estate men or speculative builders with borrowed money. Previously the situation was somewhat different, the prospective owner of a building having the money saved up ready to pay for the building, it being a matter of investment with him. Mr. Wittker believes that normal conditions will prevail in the future. The officers of the Wittker Hardware & Contractors Supply Company are G. A. Wittker, president, and H. Kombrink, secretary.

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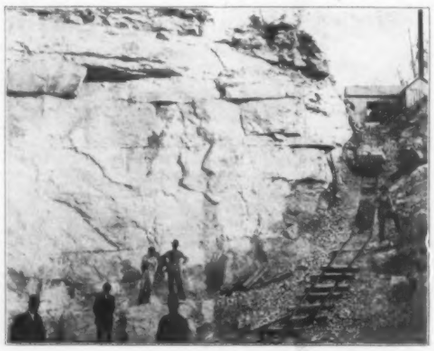
One of Missouri's most important lime making establishments is located near Eugene, Mo., on the Rock Island railroad, one and one-half miles



QUARRY OF SPRING GARDEN MARBLE & WHITE LIME CO., EUGENE, MO.

west of that point. The company is known as the Spring Garden Marble & White Lime Company, and manufactures the well known "Spring Garden" white lime. It has offices at 1009 North Third street, St. Louis, Mo., where the product for that immediate vicinty is handled and marketed.

The deposit of limestone consists of 52 acres underlaid with a strata averaging about 80 feet thick, of a high-grade, uniform quality of lime rock which runs in ledges from three to eight feet thick.

The method of conveying this material to the lime plant of the company is amply illustrated in the accompanying reproductions from photographs of the concern's plant and conveying equipment. At the quarries the very latest and most up-to-date machinery for handling the rock is employed. The drum cable system is utilized for conveying the rock to the kilns, a distance of 700 feet.

From the bottom of the quarry, the dump cars loaded with the material are drawn up an incline to a level with the top of the quarry, where they are then easily drawn to the kilns over an elevated trackway having a slight incline, dipping towards the kilns, thus minimizing the difficulties usually encountered in conveying the heavily loaded cars to the burning plant. The cars after being dumped are then easily withdrawn to the quarry by means of a cable. The company has found this method of conveying very economical both as to handling cost and in the time consumed.

The kilns are located in a thickly wooded country near the Osage river and therefore fuel for the burning is to be had in ample quantities, and very cheap.

The product of the Spring Garden Marble & White Lime Company is of excellent quality and is used in all classes of work where lime is required, and has always given perfect satisfaction to all dealers who have handled the same, finding a ready demand with contractors, builders and other users of lime. The bulk of the product is marketed throughout the states of Missouri, Kansas, Nebraska, Oklahoma, Iowa, Colorado and Wyoming.

The limestone of this quarry also admits of a high polish and can be used for building purposes.

* * * *

For many years the Williams Patent Crusher & Pulverizer Company, with headquarters at St. Louis and branch offices in the principal cities of the United States, and having foreign offices in England, Mexico, South America, etc., has been one of the important commercial institutions of the "Key City." This concern has grown apace with the development of the city generally. It first began operations in 1846 when its president, M. F. Williams, a pioneer in the crushing machinery industry in the United States, first began to manufacture a small crusher in a log cabin not more than 12 by 20 feet in dimensions.

St. Louis early began an era of general expansion and so did the Williams Patent Crusher & Pulverizer Co., which, erecting larger and more commodious quarters from time to time, has now reached a point of development where an entire city block is utilized for the housing of its machinery making equipment.

The factory of this concern has always hummed with industry, emulating the example of its progressive and energetic founder. Associated with the elder Williams in the conduct of this mammoth organization are his three sons, M. J., A. F. and O. J. Williams, who are verily chips off the old block. Industry, efficiency, courtesy and tireless endeavor have been handed down from the senior Williams to the present generation and these notable traits have been accepted and furthered where possible in a manner reflecting honor and glory on their illustrious father.

To visit the plant of the Williams Patent Crusher & Pulverizer Company one receives an impression of operating efficiency carried to a degree of excellence. Here every detail has been carefully worked out with the view of adding to the quality of its product. From 1846 to 1913 is but a span of one generation but in that time a line of machinery has been invented and placed upon an economical working basis that is today the last word in the manufacture in grinding machinery.

The Williams concern manufactures many types of machinery and practically every branch of industry where grinding is needed is covered by one or more types made by the company. The readers of ROCK PRODUCTS, however, will be particularly interested in those made for grinding such material as burned granite, burned clay, cement clinker, cement rock, clay, fire proofing, fire clay talings, calcined fire clay, fire brick, fibre staff plaster, gypsum rock, gravel, hydrated lime and cement, lime, limestone, molding sand, mastic wood fibre plaster,

LIME PLANT AND ELEVATED TRACKWAY OF SPRING GARDEN MARBLE & WHITE LIME CO., EUGENE, MO.

plaster, silica, shale talings, sand grout, etc. In these materials there are offered different types of machinery manufactured by this concern which are worthy of the consideration of all who have to use such equipment in their vocations. Lack of space prevents us from describing in detail all of the machinery manufactured by this concern that is being used daily by the building material field and we, therefore, will confine ourselves only to a description of one or two of the machines:

For the purpose of grinding limestone the "Giant" No. 9 will be interesting. This machine for some time has been in use by hundreds of quarrying concerns throughout this and other countries. The machine takes macadam size limestone and reduces 20 to 30 tons per hour 95 per cent, 20 mesh, with 175 h. p. It is equipped with an automatic metal cape or trap, and when metal gets in with the goods there is provided a brake bar which gives way and allows all metal to discharge freely, which prevents injury to the grinder.

The "Jumbo" crusher, which is a twin of the "Giant," takes limestone in 8-inch cubes and reduces to ¾ inch and finer at from 150 to 250 tons per hours. The low cost of maintenance on this type of crusher is especially interesting to the cement maker and the crusher is in constant use by many of the world's leading plants. A No. 6 Williams "Jumbo" limestone crusher has a record of crushing 216,000 tons of 8-inch cubes and finer limestone down to ½ inch and finer in the past eleven months at a cost for upkeep, including belts for driving the machine, of 3½ mills per ton, which is decidedly economical.

Of pertinent interest at this time will be the limestone grinding machine for agricultural limestone. Lime is being recommended now universally for sweetening the soil and putting new life into it so that crops such as alfalfa and clovers can be raised that are impossible otherwise. The United States government has manifested a deep interest in this field, as is attested by the work now going on at the various state experimental stations. The grinding of limestone for agricultural purposes to be sown upon certain lands is fast becoming the popular way of fertilizing in limestone localities and neutralizing the acid in the land which has been "sour," as it is commonly termed. The opinion has been unanimously expressed that raw limestone high in carbonate of lime is very beneficial when pulverized and sown in wheat drills when sowing wheat or other crops, or it can be sown upon the ground and made quite beneficial when so used.

The Williams concern manufactures both stationary and portable grinders for the above mentioned purpose, and also two smaller sizes which are somewhat lighter constructed machines and will pulverize fertilizer limestone equally as well and to as good advantage where parties have less power and wish to use same for an all around farm grinder. These two smaller types, when not grinding limestone can also grind bones, or any class of fertilizing material as well as ear corn, shell corn or any other class of feed for farm use.

The Williams system of grinding is a succession of rapid impact blows caused by centrifugal action and superinduced by the flexibility of the beaters or hammers which with each revolution strike the material between points of the revolving body and the cape or screen, the cape being the stationary grinding surface. The machines are equipped with all the adjustments that it has been possible for mechanical ability to devise. These adjustments are to the Williams machine what the brushes are to a dynamo or motor, and with them the machine at all times maintains its grinding diameter which makes for a hundred per cent investment. It is claimed by the company that these adjustments alone mean thousands of dollars saved to the prospective buyer and that maintaining the grinding diameter keeps the machine at the same capacity as when purchased.

The Williams Patent Crusher & Pulverizer Company issues a general descriptive catalogue of all their crushers showing cuts of the same and giving complete descriptions.

The officers of the Williams Patent Crusher & Pulverizer Company are M. F. Williams, president; Hoyt H. Green, vice-president; Geo. F. Cottrill, secretary and treasurer. M. J. Williams is Eastern sales agent; A. F. Williams is Western and Southern agent, and O. J. Williams is Pacific Coast agent.

* * * *

Granite City, Illinois, just across the river from St. Louis and a little north of East St. Louis, contains one of the largest building supply houses in this section of the country, that of the Granite City Lime & Cement Company, municipal contractors and dealers in builders' supplies, coal and ice. The line handled by the company includes such

M. F. WILLIAMS AND HIS SONS.

commodities as cement, plaster, plaster board, metal lath, lime, hydrated lime, bricklayers' cement, brick, tile, crushed stone, flue lining, wall coping, sewer pipe, fire brick, sand and gravel, mortar colors, etc. In addition to these the company does quite an extensive business in street paving both in Granite City and in the surrounding country. The concern also has for sale approved gilt-edge special street improvement bonds.

A. W. Eisenmayer, Jr., vice-president of the Granite City Lime & Cement Company, recently informed a representative of ROCK PRODUCTS that while his concern has supplied building materials for a great number of dwellings and small buildings, there has been no construction work of great importance put up in the vicinity of the concern with the exception of a ward school and a new high school, which were erected in Granite City and in which the materials of the Granite City company entered in their construction. The high school was built with Alton paving blocks, hollow building tile for backing up and concrete for foundation.

"Our business throughout the year has raised from 25 per cent to 100 per cent greater month for month than it did last year," said Mr. Eisenmayer. "The prospects are for an increase over this during the coming year." The Granite City Lime & Cement Company is the successor of A. W. Eisenmayer & Co., which was founded in 1900. On March 23d, last, Easter morning, the entire plant, which was approximately 300 by 450 feet, was destroyed by fire resulting from lightning. As an evidence of the speed and energy with which the affairs of the company are conducted, it is of interest to note that by 11 o'clock on the same morning the officials of the concern had arranged and opened new offices in temporary quarters, phones installed and resumed regular business at 6 o'clock the following Monday morning without interruption of any kind.

New quarters have recently been completed, and while not quite so large as the old buildings they are much better adapted for the purpose of handling builders' supplies, being much more convenient. The new building contains more than 115,000 feet of storage space, all of which is utilized by the concern. The offices of the company are attached to the warehouse building and are vastly superior to those used by the concern before the disastrous fire above mentioned.

The Granite City Lime & Cement Company is singularly located for the purpose of carrying on a builders' supply business. Granite City may aptly be termed the industrial annex of St. Louis, for here the fires of industry never go out. Almost in the shadow of the downtown skyscrapers of St. Louis may be found work for all. The enormous amount of business, residence and other structures going up in Granite City convincingly attests to the prosperity that is ever present in this growing manufacturing city; for homes, as well as manufacturing plants and business structures, are being put up in great numbers every day. Granite City has the advantage of unsurpassed railroad facilities and is situated directly on the Mississippi river. The Granite City Lime & Cement Company constitutes one of the important business enterprises of that municipality. The officers of the concern are A. W. Eisenmayer, president; A. W. Eisenmayer, Jr., vice-president; Louis Benger, secretary, and John Ibbotson, treasurer.

* * * *

In the course of events in which the serious problems of improvements and modernizing of certain building materials the question of more adequate and efficient plastering service has had its extensive attention from inventors. Within the last ten years men skilled in the practical requirements of construction have lent their services to this department of the developing period with splendid results. Inasmuch as the "cement age" is the most talked of and thought of era throughout the building world it is then reasonable and consistent that the plastering proposition should advance.

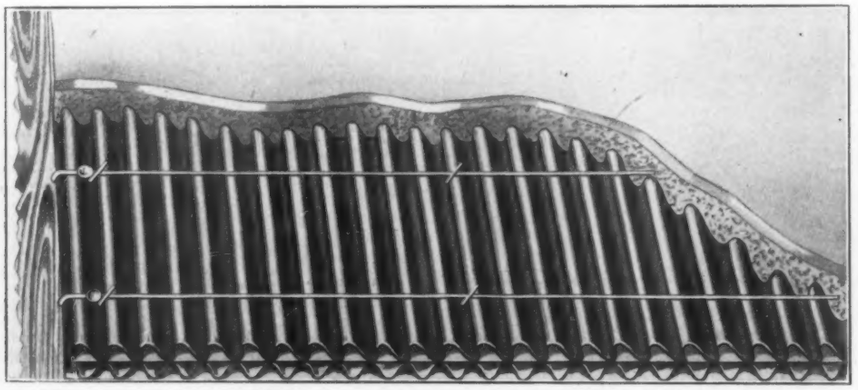
There was ample room for improvement. It is of little wonder that old methods of plastering would not work well with the more modern building construction. It is pointed out that often the architect or contractor was held responsible for defects in cement plastered walls and ceilings. As a matter of fact, if examination were made the fault was proved as defectiveness caused by application of the new hard wall, quick setting plaster to the same old wood lath base that was invented centuries ago, at which time there was provision made only for a slow setting lime mortar.

The inventor was then turned to the necessity improvement in this particular direction by the inferiority of the wood lath of yesterday. Ninety who pays the bills.

A St. Louis architect, after passing through this same experience, devoted several years' time to the development of a plaster base or board which would eliminate the conditions resulting from the wood lath defects mentioned. With improvements in this direction comes Reinforced Plaster Board, a product designed to meet the new conditions. Laboratory tests and actual practice have proved its superior qualities.

Reinforced Plaster Board is constructed of waterproof corrugated board built up in air cell formation, the corrugations crossing at right angles to enhance its stiffness. This product has its advantages in construction for interior lath from four sheets of heavy waterproof paper. The corrugations are crossed with automatically stapled galvanized steel wire which creates reinforcement to the plaster slab as is found in like manner with steel bars when used in floor slabs. With that

TURKISH BAND STAND IN BEAUTIFUL FOREST PARK, ST. LOUIS.



DETAILS OF REINFORCED PLASTER BOARD SHOWING REINFORCED SLAB RESULTING FROM COMBINATION WITH CEMENT PLASTERS.

base of construction the sheets are designed to meet modern requirements. The sheets are 2 by 4 feet and 4 x 4 feet and about ⅜ inch thick. The reinforcement wires are parallel and spaced three inches o-c.

They are held in contact with the corrugations by copperized steel staples. The accompanying illustrations show in detail the construction of reinforced plaster board and its possibilities in application. The product is manufactured by the Plastic Products Company, with offices at 1500 Central National Bank Bldg., St. Louis, and factories located at 410 South 4th street and 1114 South 5th street. The product is a good one, and in itself is an indication of rapid advances of St. Louis as a building material producing center.

* * * *

IXL Insu-Metallic Products Company of Missouri, suites 209-10 Houser building, St. Louis, Mo., manufactures a product known as Voegel's fireproofing liquid cement, which is a transparent, odorless, non-explosive cement in concentrated form, containing no oils or animal fats. When diluted with boiling water it produces many results heretofore not obtained. It is useful and economical in its concentrated form as a liquid fireproof cement, liquid glue and fireproofing for wood and fireproofing for textile fabrics, varnish remover, and a grease or paint remover.

In its diluted form it is useful as a liquid cleanser and remover of paint, ink or grease spots and a liquid soap. For the mending of china, glassware and porous crockery it is only necessary to rub with a cloth until the pores are filed, then put the pieces together and leave undisturbed for twenty-four hours. When well applied the pieces will not break where mended as easily as any other part of the repaired articles, it is claimed. If not well cemented and the parts separate, it is only necessary to wash the broken parts, add a little more cement and try again.

As a glue for woodwork, furniture or steel to wood or paper the method is to be sure to clamp together or put the article under pressure until time has been given to bind itself together. It is said to be unsurpassed for this purpose.

As a liquid fireproof cement applied with a brush to any surface, plaster or wood, it can be colored and will bind itself. As a stain, in order to produce original colors, get the best dry pigments and dissolve in boiling water, adding the product which is known as solution No. 2 and any shade desired may be attained. The liquid cement is considered a fine coating for inside iron work, especially piping, whether steam, water or hot air, and is an insulator as well. A little gasoline should be used in this connection. The solution will make fireproof such textile articles as burlap, duck, silks, satins, cloths, etc. A demonstration of this was made in the presence of the writer, Mr. Voegel laying a piece of burlap containing three coats of the solution alongside a white pine board which had been treated likewise, on top of a gas burner, which had been lighted and turned on full force. The burlap remained three minutes before igniting, ignition coming at the raw edges of the cloth which had not been properly treated with the solution. The pine board remained on the burner five minutes without taking fire.

The solution is excellent as a varnish remover, it being only necessary to apply the same to surfaces either in the original or diluted state, let dry for a few minutes, then use water. It will remove grease or dirt from any painted surface or paint from glass. If clothes are soaked with grease or oil very heavily, soak them in water one to three

RAILWAY EXCHANGE BUILDING, ST. LOUIS. LARGEST IN THE WORLD.

concentrated solution and boil same with two or three rinsings. As a liquid cleanser one 10-cent can will make three quarts. One quart will make three gallons of liquid cleanser. For special purposes dissolve the concentrates in boiling water and stir well. It is said to clean paint, varnish, grease or dirt off hands and body, as well as from knives, forks, dishes, pans, pots, marble, paint and woodwork. This is in diluted form. It will also remove ink, coffee or fruit stains or paint spots from any fabric by the simple process of boiling in a solution of one to two until clean. No danger is attached to this operation as the solution contains nothing inflammable.

It may be used as a coating on wood by applying very thin in the concentrated form with a brush, taking cloth or sponge on first application and rubbing into pores on finished side of wood. It acts as a stain and as a filler. It should be applied very thin at all times. As it dries very quickly much can be accomplished in a short time.

It is non-combustible and is to be had at drug, paint, grocer, hardware and auto supply stores. Further particulars may be secured by addressing the company, as noted above.

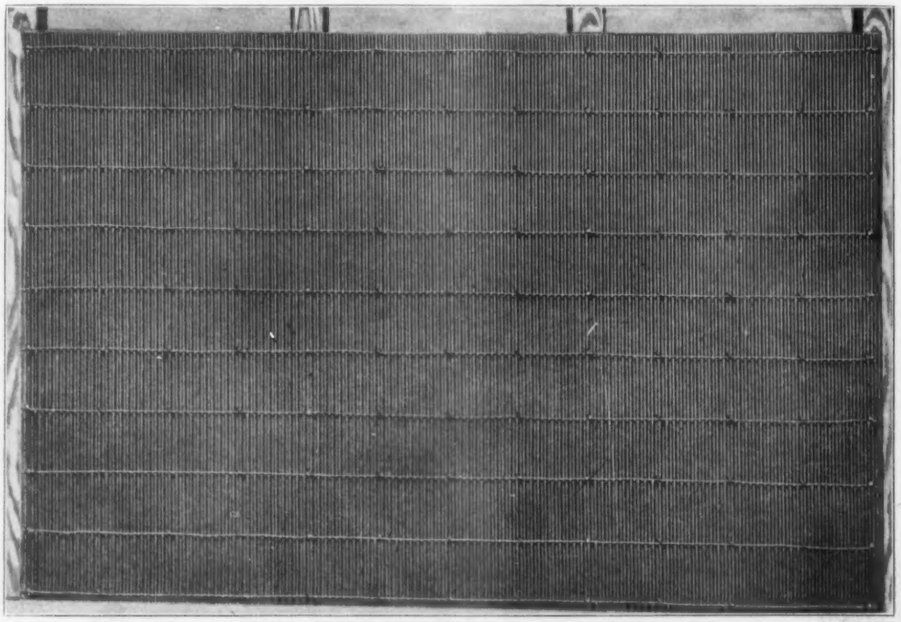
* * * *

Imposingly monumental is the immense white, almost monolithic, structure which has only recently been completed—the Railway Exchange building. This mammoth building was erected primarily for the housing of the offices of the various railways entering the city of St. Louis, and also contains a large number of other offices. The first seven floors are taken up by one of the city's greatest dry goods and general merchandise establishments.

The first appeal which the establishment makes comes from the immensity of the structure itself, and in consequence a number of detailed facts in connection therewith will be especially interesting. The building is twenty-one stories high. Its weight in pounds as constructed has been calculated to be 278,460,000. The steel which entered into the construction framework weighed 10,472 tons. The total length of the structural steel, if placed end to end, would be in excess of 25 miles. In equipping the elevators, more than 17 miles of wire cable were utilized, and these elevators will travel up and down their shafts during the day a distance in excess of 800 miles.

In illuminating the structure the incandescent lights placed within it total 1,300,000 candlepower. The electric light wire laid throughout the building for its illumination was in excess of 130 miles, and the steam and water pipes used in its equipment aggregate more than twelve miles. For cleaning purposes 176 stations have been installed to which vacuum cleaners may be attached, and the entire establishment cleansed without the unpleasant features accompanying other methods of removing dirt.

There were placed in the beautiful white exterior of the building no less than 182,978 pieces of terra cotta. The drinking fountains placed throughout the structure number 65. There are 14,525 auto-



A SHEET OF REINFORCED PLASTER BOARD, FOUR FEET WIDE, APPLIED ON STUDS 16 INCHES O-C READY FOR PLASTER.

matic sprinkler heads located throughout the building for protection purposes. There are 4,900 windows above the first floor, the latter portion of the building being enclosed in plate glass show windows. In such windows as were necessary to be provided with fire protection there were placed 95,300 square feet of wired plate glass.

The radiators utilized for heating the structure filled 35 freight cars, and if these radiators were placed end to end they would reach more than two miles.

In the excavation of the building more than 50,000 wagon loads of earth were removed.

Above the seven floors of the retail department store the fourteen stories each contain 105 offices, housing many railroads from which the structure takes its name of the Railway Exchange building.

The total floor area of the building is about thirty acres, or 1,360,000 square feet. Its total bulk is 15,500,000 cubic feet. The approximate ground area is 62,000 square feet and the height of the building measures 308½ feet from the basement floor to the roof line of the topmost penthouse. The structure rests upon 110 caissons, each 5 feet in diameter, and extending 70 feet below the street level. The exterior is of glazed terra cotta, which gives the building the appearance of an immense white monolith.

Throughout the entire establishment, non-combustible materials were used so far as it was possible to do so, and each floor is isolated from every other floor by means of fire-proof and closed stairways and elevators. As a matter of fact, the building is as nearly fire-proof as human endeavor could make it, and that this is recognized by insurance companies is shown by the rate which has been made of 19c per hundred.

* * * *

In the growth of St. Louis from a town of less than 2,000 souls a hundred years ago to a city of three-quarters of a million inhabitants with a quarter of a million more in the immediate vicinity and within the delivery district, the development of the local building materials has been by no means the least of the important developments that have entered into and been a part of the growth of the city.

Nature deposited right at the location of St. Louis a valuable clay bed of high quality which was first manufactured into common bricks, so that with the first pronounced growth it became a brick city, which mark is still to be found on every street and every alley throughout the present St. Louis.

Later came the perfection of the art of turning out clay products, the manufacture of sewer pipe, fire brick, paving brick, of refractory and retort, and the whole line of clay products came into existence and became standards and a part of the commerce of the world.

Nature again planted beneath the subsoil of the locality a splendid body of lime rock which was in every way suited for the production of a fine quality of lime, and this very early became one of the industries of St. Louis and the product of her early lime makers supplied the Mississippi Valley all the way down to New Orleans in the days of the flat boat and afterwards the steamboat.

In recent years Portland cement has been successfully manufactured, and with the development of the railroad system reaching into Texas, Iowa and Kansas, plaster products of the quarries and mines have come into prominence, so that today in lime, cement, plaster, brick, sand, crushed rock, stone, the principal building materials are developed and supplied from the mills and quarries of the manufacturers of St. Louis which are famous the world around.

METHOD OF QUARRY TUNNELING USED BY THE KANSAS CITY P. C. WORKS AT ITS KANSAS CITY PLANT

The sand and gravel supply of the city as well as the surrounding districts naturally comes from the bed of the three rivers—the Mississippi, the Missouri and the Merrimac, the deposits of which are annually renewed with the spring freshets, so that the supply is practically exhaustless and the many producers and handlers, amongst which the Union Sand & Material Company is the most prominent, who supply the consumers, concrete and plaster contractors, never find a shortage of these chief essentials of concrete and plaster. In the line of concrete aggregates a high grade of material comes from the granite quarries located a short distance from the city, and these comprise Missouri gray and red granites, which have been used effectively in polished and rubbed work in some of the best concrete floors that have been produced.

The numerous limestone quarries located on both sides of the Mississippi river supply an abundance of crushed limestone at reasonable delivered prices for the execution of concrete work, which has been steadily growing in volume for the past decade until the amount of such materials handled sums up a tremendous tonnage.

Little or no bank sand is used by the St. Louis contractors, for the reason that washed river sand is recognized as a superior product by them and is therefore much preferred, while at the same time washed river sand in St. Louis is really a cheaper commodity than any bank sand that could be freighted into the city and delivered from the cars.

* * * *

The St. Louis Portland Cement Works manufactures the famous "Red Ring" brand of Portland cement right in St. Louis, and is owned by the Union Sand & Material Company, which also operates the Kansas City Portland Cement Works, at Kansas City, making the well-known "K-C" brand at that place. A. H. Craney, one of the most active and able cement men in the industry, is the head of the cement operations, and he is personally familiar with every detail of the same. "Red Ring" brand is quite popular, naturally, in its home city and has a very wide sale throughout the St. Louis district, enjoying the confidence of the contractors who use it with ever-growing and constant demand.

In visiting Mr. Craney's office recently he gave us the details of a blast that was made at the St. Louis plant by experts sent out by the Du Pont Powder Company to demonstrate the efficiency of tunnel blasting. A place at the great quarry was selected where a practically perpendicular face of rock was exposed, approximately 500 feet long. A tunnel was mined out at the bottom of the quarry face, as shown by the opening in Fig. 1, and after tunneling in for about 50 feet, laterals in both directions were drifted out from the tunnel and dynamite deposited in the resulting gallery. The mouth of the tunnel was then closed up with rock and earth and a battery connection, as shown in Fig. 3, was effected. The pile of empty boxes shown in Fig. 1 illustrates the volume of the charge there being 118 boxes of dynamite.

When all preparations were completed, from a safe distance the explosive was worked and the exploding dynamite in the gallery below ripped out the quarry face resulting in a tremendous fall, as shown in Fig. 2. This blast was made the latter part of last June and two steam shovels were kept constantly busy in gathering up the rock up to the middle of October. Another similar blast is being prepared at the present time.

In speaking of quarry operations, Mr. Craney turned to the character of their work at the Kansas City plant. In this instance they have an open-face

QUARRY OF ST. LOUIS PORTLAND CEMENT WORKS; FIG. 1. FACE OF QUARRY BEFORE BLASTING, SHOWING 118 BOXES OF DYNAMITE; FIG. 2. RESULT OF TUNNEL BLASTING.

quarry close to the railroad, and this quarry operation has always been carried on by the tunnel process.

We give an illustration which shows the system used at the Kansas City plant. The peculiarity of the rock formation is a seven foot strata of soft material which occurs at exactly the right level for the drifting of the tunnel economically, and the steam shovel used at the plant is equipped with a tractor so that it travels into the tunnels to load the quarry cars which come out with the product of the mining operations that are carried on in the farther end of the tunnel.

The tunneling arrangements at the Kansas City plant, as assisted by nature, is a very economical method of quarrying the limestones for cement-making purposes. A large part of the cost of quarry tunneling in other places has been found to be the top opening of the tunnel. It is simple enough to blow out the lower levels of the tunnel after a floor is established to stand on and work on. It is carrying out the top of the tunnel holes that makes the expense. In this case a soft strata just at the right level with that part which is the expensive part of tunneling reduces it to a minimum cost, so that the tunnel of the Kansas City plant is really cheaper than the average open-face quarry.

These factors in connection with quarry operations, which are a large part of the initial expense of the production of Portland cement, have been studied out and applied effectively in the two plants which are under the direction of Mr. Craney's skillful management.

In speaking of business conditions Mr. Craney remarked that while building was a little off color the demands in heavy engineering projects had quite filled up the call so that upon the whole the cement situation in the great St. Louis market was quite as satisfactory as might be expected with the average business conditions of the country taken into consideration.

* * * *

The American Pulverizer Company, East St. Louis, Ill., is a crusher-making concern of vast importance to the manufacturing interests of the St. Louis section. It manufactures the American Ring Pulverizer which is designed for crushing and pulverizing limestone, lime, coke, ore, brickbats, sewer pipe, terra cotta, glass, quartz, phosphate rock, sand stone, gravel, tile, crockery, flint, manganese ore, oyster shells, stove lining, shale and all other refractory materials. The American Ring Pulverizer is made in six sizes with a view to meeting the requirements of the small, medium and large consumer and is now admitted to be one of the best pulverizing machines so far devised.

The manufacture of this line of pulverizers dates back about four years and the ring principle is simply a modern instance of the adaption of an old time simple idea to the pulverization of materials in an economical way.

George C. Videtto, of the American Pulverizer Company, has given a great deal of thought and attention to pulverizing limestone for agricultural purposes and has supplied many valuable papers on that subject, one of which appeared in ROCK PRODUCTS in the August, 1913, issue.

"Millions of acres of once fertile lands have become non-productive, now agriculturally abandoned and to such an extent that observing travelers ponder over our 500 per cent increase in population during the full time of one life," said Mr. Videtto, "and question an equal replenishment of the soil while his observation leads him to believe that it has been actually subdued. Lack of production is said to have increased the cost of living, hence may it not be safely questioned have we not been subdued instead? Science rather than the man who sells high priced fertilizer stimulants which enrich him instead of the soil has brought about an average yield of wheat of 29 bushels per acre in Germany compared with 14 bushels in the United States. The subject of agriculture is taught in 23 universities and 415 other colleges and schools in Germany. Would not such institutions indicate the reason why the tiller of the soil in Germany produces more yield of wheat per acre? Would it occur to one that not one man in a hundred in immediate control of the land in the United States has a quantitive knowledge of what the soil contains or what the crops require? The wealth of our country is in her soil and her strength lies in her intelligent development. A section of the country wherein limestone abounds is a rich country. This is a truism older than American agriculture. Every soil can be made a limestone soil simply by adding pulverized limestone. Two or three tons of pulverized limestone per acre applied every four or five years at an average cost of $1.50 per ton offers a positive enrichment of the soil that in turn produces profit. Limestone is the most valuable rock for commercial purposes that we have. It abounds in diversified localities, yet in sufficient close proximities to become available for agricultural purposes in nearly all sections."

COMPTON HEIGHTS WATER TOWER, ST. LOUIS.

The American Pulverizer Company issues a booklet, "The Ring Is the Why" which will be found of interest to all users of pulverizing machinery and may be had upon application to the firm.

The officers of the American Pulverizer Co. are Paul Griesedieck, pres.; Geo. C. Videtto, secy.; E. H. Elzemeyer, treas.

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A new opera house is to be erected at Springfield, Tenn., by W. B. Taylor.

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Ludlow and Peabody, architects of the Peabody College, Memphis, Tenn., are making estimates for the construction of a new seven-story hotel building at Columbus, Ga. Plans and specifications are in the office of Alfred R. M. Hoffman, local representative of the firm.

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The contract has been let at Huntingdon, Tenn., for the boy's dormitory of the I. T. S. campus. Several bids have been received but the contract was given to Slayden and McNabb, of Waverly, Tenn. The building will be three stories, of concrete. Ground will be broken about October 1st.

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The Penn Tile Company has begun work to open a clay mine in Franklin township, near Dillsburg, Pa. A shaft of over 200 feet deep has been dug and in a short time clay will be shipped to its works at Aspers Station. The clay is black and of a very plastic nature, well adapted for tile making. I. S. Fishel, of Dillsburg, has charge of the operations.

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The new brick and tile factory at Winlock, Wash., recently began operations. Fifteen men are employed. The machinery is driven by electricity, a 120 horsepower motor being used. Individual motors are used where advantageous. Pressed brick, drain tile and partition tile will be manufactured. As soon as the products now being molded are ready for the kiln, the crew will be doubled.

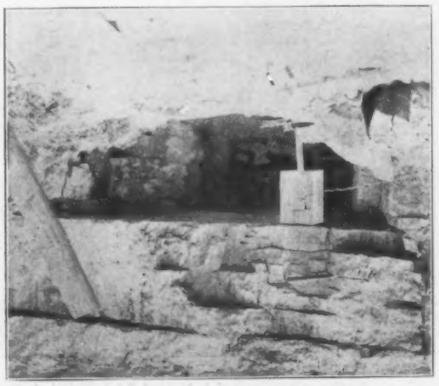


FIG. 3. TUNNEL IN FACE OF QUARRY, ST. LOUIS P. C. WORKS, SHOWING BATTERY CONNECTIONS.

## NEW HOTEL FOR ATLANTA, GA.

The Hotel Ansley, just opened in Atlanta, Ga., represents an attractive piece of architecture and ROCK PRODUCTS' Atlanta representative has been favored with some of the details entering into the construction. The exterior reinforced concrete walls were thoroughly treated with hydrolithic waterproof coating, thus preventing moisture penetrating the walls. The exterior trimmings of the poured concrete walls are of gray terra cotta.

The building is fireproofed throughout with Pyrobar gypsum tile. Every bathroom wall above the marble wainscot is put on with Keene's cement, over which is three coats of lead and two of enamel paint. The carpet strips or thresholds of these doors are of Colorado Yule marble. All beams, cornices and capitals are of ornamental plaster. The parapet walls are covered with a pleasant shade of ornate green tile. The ballroom is laid with reinforced concrete over which is Cabot's felt cushion, and on this is a beautiful, carefully selected maple floor redressed and sand papered.

Brinton B. Davis, of Atlanta, Ga., was the architect. The Ansley Hotel Investment Company are the builders. The company was organized and entirely financed by J. B. Pound, formerly of the Chattanooga News and also associated with the Hotel Patton, and Hotel Henry Watterson properties at Chattanooga and Louisville respectively.

The building is of fifteen stories, reinforced concrete and steel, and is one of the tallest reinforced concrete buildings in the South. The hotel contains 300 bedrooms, most of which have private bath. A rathskeller seating 300 is in the basement. The

HOTEL ANSLEY, ATLANTA, GA.

exterior face of the building is Stone mountain granite, the first two stories being terra cotta and the balance of the building of gray brick. The upper stories are ornamented with polychrone terra cotta, with a large protruding cornice highly ornamented and a green tile roof. The building and site cost above $1,000,000.

The building was constructed by the St. Johns Construction Company, a Florida corporation which had previously built the Seminole hotel, another hotel in the same syndicate. The supervising architect was W. L. Stoddart, of Atlanta. The hotel was finished within a period of slightly over twelve months. John F. Letton is the first manager and he is from Missouri. He has an able staff of assistants. H. Wolke and Bro. Company, of Louisville, furnished the case goods woodwork. J. M. Clayton, of Atlanta, Ga., was the contracting electrical engineer. The elevators were installed by the American Machine Company, of Louisville. Royal Portland cement was used, furnished by the Dixie Portland Cement Company, of Chattanooga, represented in Atlanta by the R. O. Campbell Coal Company. The Keys-James Brick Company, of Chattanooga, furnished the interior decorating brick. The decorations depict historic scenes from the days of the Cherokee Indians to the days of General Oglethorpe in Georgia. The military scenes, incidents to General Sherman and other Civil War veterans, also have a veiled reference. The hotel is in every respect a monument to modern Atlanta.

# QUARRIES

## GLIMPSE OF CRUSHED STONE INDUSTRY OF CENTRAL PENNSYLVANIA.

Stone crushing is a very important industry of central Pennsylvania, and nowhere is it more in evidence than in the Juanita Valley. Corrigan, McKinney & Co., of Cleveland, Ohio, operate a quarry on what is known as the Clover Creek branch of the Pennsylvania railroad, from which they extract limestone for fluxing their furnaces. This business is conducted under the name of the Josephine Coke & Furnace Co., and turns out from ten to thirty cars of crushed stone per day.

The equipment consists of a Number 8 Gates crusher; a 3-drill Ingersoll-Rand compressor; a Gates conveyor carrying about 50 buckets; 3 Hartsoeg drills and one large Ingersoll-Rand drill; a Ball engine, several pumps and water heaters. The stone cars are constructed by the company's own men on the ground and have a capacity of about 7,000 pounds.

About sixty men are employed at this plant, including tonnage and day men. The powder for the plant is furnished by the G. R. McAbee Powder & Oil Co., of Pittsburgh, Pa. Ed. Lang is the capable and efficient superintendent, having been in charge since the quarry was opened a number of years ago. J. E. Ake is his able assistant, and has been associated with Mr. Lang for several years. East and west of this quarry are those owned and operated by the Pittsburgh Limestone Co., who are big producers of limestone.

Corrigan, McKinney & Co. have recently acquired valuable property about four miles west of the above site, situated on the Springfield branch of the Pennsylvania. This property consists of a ledge which is about 4,000 feet long by about 60 feet high, and is estimated to contain approximately 6,000,000 tons of stone. The analysis shows it to run very low in silica (about 2%) and high in its lime and carbonate of lime contents.

About two miles east of this property is the quarry of the American Steel & Wire Co., which has been producing good limestone for the past 20 years.

## SAN FRANCISCO QUARRY NEWS.

San Francisco, Nov. 18.—Mr. Kiefer, of the E. B. & A. L. Stone Co., San Francisco, states that machinery for the new Petaluma, Cal., plant was not taken from the Cordelia quarry, as formerly reported. The latter plant is now in full operation, and the Petaluma quarry, which was taken over the first of the year and fitted up in first-class shape, is busy getting out material for the state roads. The Rockaway quarry, on the Ocean Shore, has been running double shifts lately, getting out lime rock for macadam work in San Mateo county, where some large road building contracts are under way.

The latest contract for San Mateo county road work was taken by the Raisch Improvement Co., of San Francisco, amounting to $32,825, consisting of 1⅓ miles of pavement, 20 ft. wide. It will be macadam on a 5-in. concrete base, with 1½-in. asphalt wearing surface. The work is being done under a $1,250,000 bond issue for road improvements, and is in addition to the state highway work.

Operations have been begun for the movement of a vast quantity of rock for paving in the Panama-Pacific Exposition grounds. The rock is being taken from the cliffs at Fort Baker, where a steam shovel has been set up, the unloading on this side being handled by a locomotive crane. The work is being done by Palmer, McBryde & Quayle, who have contracted with the Crowley Launch & Towboat Co. to tow the rock barges across the Golden Gate.

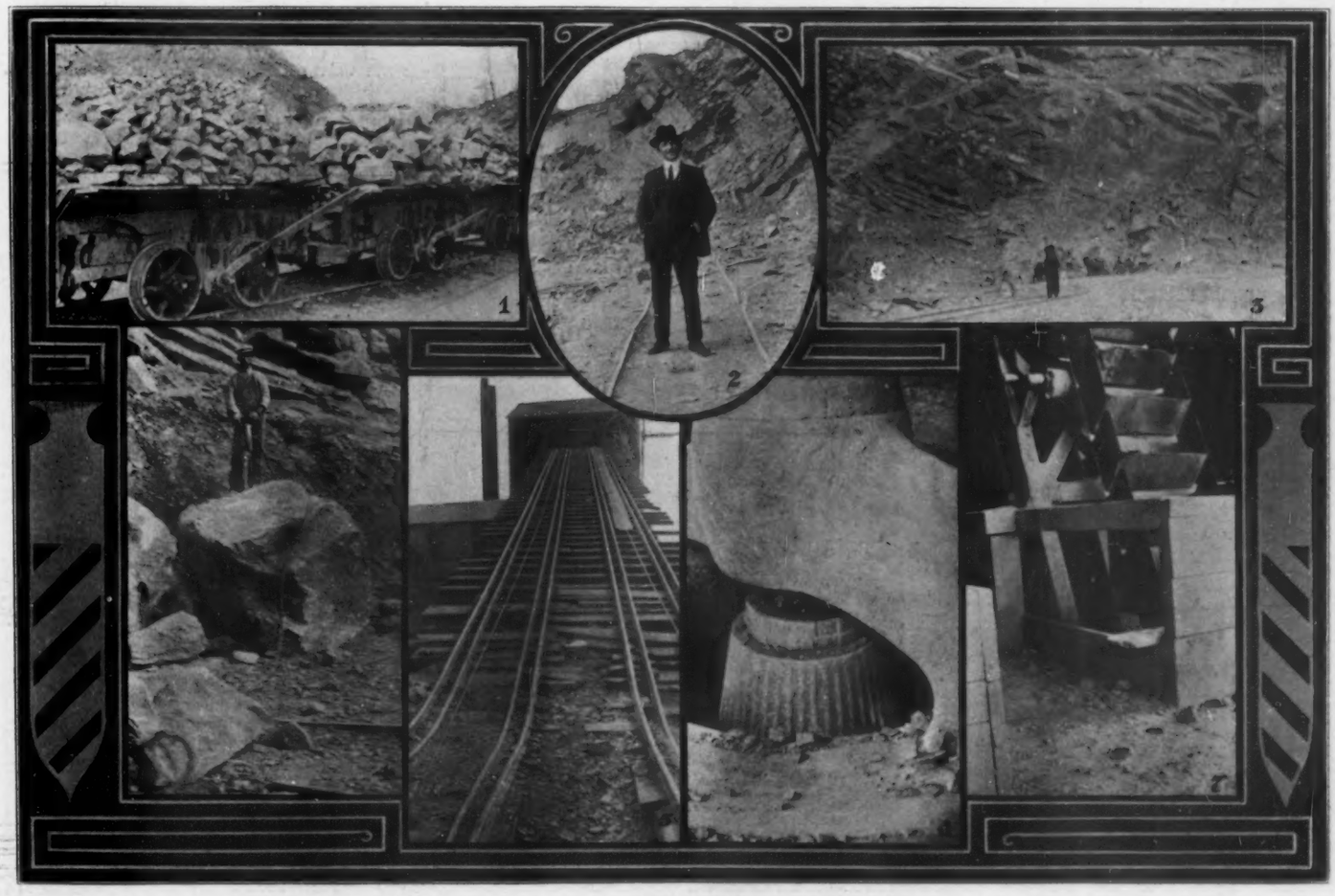
It is announced that Walter Moore, W. T. Trenchard and W. A. Walker, of San Diego, will build a big rock crushing plant near Coyote Wells on the new San Diego & Eastern Railroad, between San Diego and the Imperial Valley.

The Indian Creek Stone, Sand & Development Company, Connellsville, Pa., has been organized by John Duggan, John P. Kephart and J. J. McFarlan of Connellsville, Pa. The company has been formed to develop the natural resources of the Indian Creek Valley in Fayette county, Pa., and will quarry sand stone and crushed stone and also engage in the manufacture of cement blocks. Operations will begin right away.

The T. H. Smith Stone Company, of Sturgeon Bay, Wis., has awarded a contract to the Stevens-Adamson Company, of Aurora, Ill., for the erection of a large storage plant at their crushed stone quarry near the mouth of the bay. Officials of the company hope to have the plant completed by March 1, 1914, so that they can get a supply of crushed stone on hand before the opening of navigation. The storage plant will have a capacity of 15,000 tons of stone.

The Neosho special road district of Neosho, Mo., has been provided with all steel portable rock crushers with elevator which was manufactured by the Webb City and Carterville Foundry & Machine Works, Webb City, Mo. This crusher will be used in the road improvements in and near Neosho, which are quite extensive. The crusher was demonstrated at the Ozark Trails convention held at Neosho on Nov. 6-7. This crusher has proved of exceptional interest to the road builders of that section.

The Wilson Gorge Rock Company, with head office at Newton, N. C., is rushing to completion its plant on Wilson Creek, Caldwell County. The machinery is being installed and everything made ready for the operation of the plant at an early date. Mr. Howard McLaughlin of Newton has moved to the scene of operations and is superintending the work personally. The incorporators of the company are: C. F. Crosby, W. S. Barfield and W. S. Bulwinkle, Chester, S. C.; J. A. Bulwinkle, Gastonia, and Capt. J. W. Pope and Howard McLaughlin of Newton. Twenty men will be employed from the first and this number will soon be increased.




JOSEPHINE COKE & FURNACE CO., WILLIAMSBURG, PA. 1. QUARRY CARS LOADED FOR CRUSHER. 2. J. E. LANG, SUPERINTENDENT OF QUARRY. 3. VIEW OF LEDGE. 4. OPERATING A HARDSOCK DRILL. 5. INCLINE LEADING TO CRUSHER. 6. NO. 8 GATES CRUSHER. 7. GATES CONVEYOR.

## DRILLING AND SHOOTING TRAP ROCK.

### Factors That Make This Method of Production Economical and Successful.

The one material which has given the quarryman the greatest worry in drilling and shooting ready for the crusher is trap rock. This material, aside from being extremely hard, is usually full of crevices, and the stratification runs in all possible directions. The drilling is made extremely difficult on this account when using holes of small diameter, as in the case of the tripod drill, as the small drills tend to follow the crevices and cracks in the rock, and on account of the slow progress it makes the drilling cost by this method of drilling runs very high.

Some idea of a trap rock proposition can be gained from the accompanying cuts which show the actual conditions in the quarry of the Eagle Rock Company, of East Orange, N. J. The average height of face in this quarry is one hundred feet, and the length of the ledge is fifteen hundred feet. When the drilling in this quarry was done with the tripod drills and the stone brought down in bunches, the cost of production was very high—the face of the quarry was very rough, and the capacity of the plant could never be maintained to anything like its fullest extent on account of the drilling and shooting problem. In the past few months it has been discovered that a large charge placed in a big hole is by far the most economical method of producing trap rock.

A Cyclone big blast hole drill was installed in this quarry, drilling 5⅝-inch holes to the full depth of the face. Several shots have been fired and in this part of the quarry the face has been squared up and each shot has produced a large quantity of stone, thereby making it possible to operate the crusher to its fullest capacity.

The following is some interesting data on cost, covering a four-hole shot recently made at the quarry of the above named concern:

| | |
|---|---|
| 335 feet of 5⅝" holes | $335.00 |
| 1,600 pounds explosive | 200.00 |
| Detonators and loading expense | 15.00 |
| Total cost | $550.00 |

Amount of stone dislodged by shot, 15,377 tons.
Total drilling and shooting cost, per ton, $.0358.

Furthermore, out of the 15,377 tons, 6,000 tons were so finely broken that the stone was loaded directly on the cars without having to be run through the crusher. After the full length of the face had been shot by this method, a still greater reduction in cost will be effected, as the holes can be spaced to better advantage, for the projecting toe at the bottom of the ledge will not have to be taken care of, as is the case at the present time. In many places where the big holes have been put in, this toe has extended from 25 to 30 feet further out than the face at the top, and in spite of this unfavorable condition, the bottom stone was broken in splendid shape for handling.

## BIG QUARRY COMPANY TO BUILD RAILROAD.

A syndicate has been formed by stockholders of the Dolese & Shepard Company, large crushed stone producers, of Chicago, to complete the Chicago & Illinois Western Railroad, which now operates a line from Hawthorne to Willow Springs. The company proposes to build an extension east from South Forty-sixth street and West Thirty-fifth street to Western avenue. The project has special interest from the fact that it represents an effort on the part of the wealthy men behind the Dolese & Shepard Company to protect their investment, which to date has been unprofitable. The Dolese & Shepard Company owns the railroad company's stock.

A number of prominent capitalists, including Elbert H. Gary, chairman of the United States Steel Corporation; William C. Brown, president of the New York Central; E. J. Buffington, president of the Illinois Steel Company, and A. F. Banks, are interested in Dolese & Shepard. Owing to the keen competition in the crushed stone business the company has been unable to pay dividends. To make the railroad property pay it is necessary to obtain better switching connections.

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McKay-Storer company, $5,000; stone and other building materials; D. McKay, Richard Storer, E. G. Lancaster.

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The Bessemer Limestone Company of East Youngstown, Ohio, is furnishing all the brick for the paving of Mercer street in Warren, Ohio.

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The Cheboygan County Limestone Products Company, Cheboygan, Mich., has been organized and extensive operations will be conducted in Mackinaw township.

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The Lightman-Sewell Stone and Pulverizing Co., Tenth avenue N. and Harrison streets, Nashville, Tenn., launched a few weeks ago, are producing crushed stone for concrete work.

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The charter of the Texas Trap Rock Company, of San Antonio, was filed with the Secretary of State on Oct. 31. The capital stock of the company is $60,000, of which $30,000 has been paid in, and the principal place of business is to be at Knippa, Uvalde County. The purpose of the company is to quarry, crush and sell rock.

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At a recent meeting of the officials of the Marion Ohio Stone Company, at Marion, Ohio, a contract was entered with the Kennedy Manufacturing Company, of New York, through its resident manager, W. W. Williams, of Columbus, for the purchase of a complete Kennedy No. 7½ crushing plant. This decision to buy was reached by the officials of the Marion Ohio Stone Company, it is announced, after careful investigation as to the merits of the various makes of crushers on the market.

## FIRST MINING EXPOSITION.

### American Mining Congress Holds Convention and Exposition of Mining Machinery in Philadelphia October 17-25.

Philadelphia, Pa., Oct. 26.—The first mining exposition given under the auspices of the American Mining Congress was opened to the public at Horticultural Hall on October 17 and continued until October 25. The exposition was held in connection with the sixteenth annual convention of the American Mining Congress, which opened its session on October 20 at the Bellevue-Stratford.

The exposition was most liberally supported by the various manufacturers of mining equipment and supplies and practically every section of the country was represented in the many exhibits of a varying character, all of which did great credit to the manufacturers and dealers.

It is estimated that there were from 1,000 to 1,500 delegates, from every section of the country, present and the congress was a grand success, both in subjects discussed and attendance.

This was the first mining exposition ever held and was conceived only three months before the opening. From an artistic standpoint and from the wide range of exhibits shown, the exposition was without parallel and the promoters deserve credit for their unceasing efforts to make it a success. Prominent among the exhibits were those of the Universal Portland Cement Company, Chicago, Ill.; Westinghouse Electric Company, Pittsburgh, Pa.; Williams Patent Crusher & Pulverizer Company, St. Louis, Mo.; Jeffrey Manufacturing Company, Columbus, Ohio; Main Belting Company, Philadelphia, Pa.; Link-Belt Engineering Company, Philadelphia, Pa., and the C. O. Bartlett & Snow Company, of Cleveland.

The exhibit of the Williams Patent Crusher & Pulverizing Company was in charge of M. J. Williams of Chicago. They featured in the display the Williams Patent Coal Splitter, which is said to be one of the very few machines that can be regulated to properly size coal. Several prominent Wilkes-Barre coal operators were visitors at this exhibition and they spent some time in making a detailed examination of the working model. This machine takes the run of the mine coal and reduces the same to the various required sizes with a maximum amount of fine dust, thus eliminating a considerable amount of otherwise waste material.

Another of the displays which was particularly worthy of note was that of the Main Belting Company, of Philadelphia. This exhibition was under the generalship of W. S. Hammerly, of this city, with the able assistance of G. E. Martin, Philadelphia, and S. A. Hodgman, a New York representative. The exhibit consisted of a stream of water running on a revolving belt to show the waterproof qualities of the product, and a conveyor handling coal.

An exhibit that attracted quite a number of delegates and visitors and caused a good deal of favorable comment was that of the Jeffery Manufacturing Company, of Columbus, Ohio. J. B. Noros, of

QUARRY OF EAGLE ROCK QUARRY CO., EAST ORANGE, N. J.: VIEW SHOWING RESULT OF BLASTING.

the New York office of the company, was "chief explainer" of the exhibit and it is conceded by everyone who heard him that he did his job well. The exhibit was a storage battery locomotive, showing the engine running with and without the pole and overhead wire. When the locomotive was making its return trip with the empties, instead of using more power it recharged the storage batteries for the next trip.

The Universal Portland Cement Company was the only concern of its kind to have an exhibition of its products entered in the show. The exhibit was titled "The Use of Cement in Mining." The protective measures of using cement in the interior construction of mines over wood and other materials was set forth in the exhibit.

Considerable interest was displayed in the Baldwin-Westinghouse Bar Frame Mine Locomotive, manufactured by the Baldwin Locomotive Works and electrically equipped by the Westinghouse Electric & Manufacturing Company. The accessibility and simplicity of the locomotive generally, combined with the non-intricate construction of the frame, attracted the attention and aroused the enthusiasm of practically all the visitors.

A working model of a complete coal handling plant with all of the equipment down to the smallest detail was shown in the exhibit of the C. O. Bartlett & Snow Company of Cleveland. This display was right at the entrance of the exposition proper and few, if any, of the visitors to the show passed it by without listening to the explanations of the workings by those in charge. Thousands of illustrated booklets, showing various parts of the mines, were distributed to the visitors.

The Link-Belt Company's exhibit of conveying, transmission and coal elevating machinery was one of the most artistically arranged displays in the exhibition. A complete line of mining belts and equipment was shown to a good advantage.

## PITTSBURGH QUARRY NEWS.

### Failure of Good Roads Bond Issue a Setback to Crushed Stone Industry—Other Interesting News of the Industry.

Pittsburgh, Pa., Nov. 18.—Stone men are greatly disappointed at the failure of the $50,000,000 bond issue for Pennsylvania roads which was turned down by a majority of 25,000 votes on election day. This bond issue was counted on to furnish them a splendid business for the next five or ten years. However, the road work is so well begun that it is altogether likely a large amount of road building will be provided for by the next legislature in some other manner than proposed in the bond issue. Trade in road and bridge stone this year has been exceptionally good during a greater part of the year. Railroad business was good early in the season owing to the floods, but for the past two months railroads have not indulged in many big purchases, as they are waiting to hear from their application for a 5 per cent increase in freight rates. Building stone in this district is giving way rapidly to concrete. Totals of sales every year seem to indicate inroads of the latter material upon the trade and many stone companies are switching their line of production to other fields on that account.

The Peebles Stone Company, of Peebles, Ohio, has secured the contract for supplying 1,400 tons of limestone for use on the pike roads in Galia county, Ohio. The company's bid was 55 cents, 50 cents and 25 cents with a freight rate of 35 cents.

The Ellwood Stone Company reports a very fair fall business. Work at its quarries is going on at full pace. Railroad business, the company reports, has dropped off considerably since August 1st and shipments in this line have been somewhat smaller than last year. The total, however, for the year's business will be ahead of 1912. The company now has more than 200 carloads of sandstone on hand ready for shipment.

The Craig Stone Company has nearly finished its quarrying for this year and will shut down its plant in a short time. Most of its business this year has been in road stone, although considerable bridge stone has figured on the orders.

The Cleveland Stone Company, according to Manager George J. Senn, who looks after the Pittsburgh office in the Commonwealth building, has had the best year in the past ten years. Paving and curbing have been the leading sellers on its list. The company may run its plant at Amherst, Ohio, considerably this winter if open weather is on hand. Just now it is reporting a very fair demand for fall trade and is shipping considerably into the Pittsburgh district. The company's plant is now about half electrified and the rest of the plant is run by an air compressor, which is one of the largest in the country.

An interesting news item for stone men is the letting of a contract by Chief Engineer C. C. Shad of the Pennsylvania Railroad for a bridge over the Kiskiminetas river at Kiskiminetas Junction, Pa. This contract provides for an all stone bridge and it is said that this is the first stone bridge contract which Mr. Shad has let since he became engineer for the company.

P. K. Morris, whose big quarries are located at West Winfield, Butler county, Pa., is very well pleased with the year drawing to a close. It is very much better than 1912, he says. "We are still mining lots of stone, as ours is a mining plant and we are not hindered by the snow or bad weather. Our plant is running full force at present, with about 200 men employed.

## THE BRADLEY 66-INCH 3-ROLL MILL.

A mill that is entirely out of the ordinary and which is said to be a really wonderful grinder has been designed and built by the Bradley Pulverizer Company, 92 State street, Boston, Mass., who have long been known as the manufacturers of the remarkable Giant Griffin Mill and the Bradley Three-Roll Mill for pulverizing cement clinker, phosphate rock, cement rock, coal, ores and all other refractory substances. The machinery of this concern is distributed throughout the entire universe and is considered to be of the highest type.

The Bradley 66-inch 3-roll mill was manufactured back in 1911, but the company has spent the past two years in making it mechanically perfect, and therefore has not attempted to place it on the market until more than two years' trial had been given it to insure that absolutely no improvements were necessary. Two of the mills are now in operation, one in the Lehigh Valley district and one in California. One of the mills is pulverizing limestone and the other is pulverizing clinker. Both are proving more than successful.

The company is now in position to accept orders for the Bradley 66-inch 3-roll mill, which is probably the largest pulverizing unit ever manufactured. The mill weighs 45,000 pounds and is 11 ft. 1½ in. high. The diameter of the die ring is 66 inches; 24-inch rolls are used which weigh 450 pounds each. The mill is designed to run at 125 revolutions per minute, which gives a pulverizing effect at about 11,000 pounds on each roll.

Economy has been the forethought in the construction of this mammoth grinder, and to that end the principle of the construction of the same has been directed, as well as the very efficient manner in which it operates. The principle of the grinding of this mill is very old and the operation of the same is simple, a plate or disc feed being used, and taking feed direct from a Number 5 crusher when breaking down limestone for tube mill feed.

In the Lehigh Valley district, where one of the mills has been in constant operation for practically two years, an average of from 35 to 40 tons per hour has been attained—the mill, however, being by no means pushed to its limit. About 200 h. p. has been used in running the mill when a fineness of 53 per cent through a 100-mesh screen has been desired, at a rate of 40 tons per hour.

The mill which has been in operation at the plant of the Riverside Portland Cement Company, at Riverside, California, has been used for breaking down clinker for tube mill feed, taking clinker the same size as it comes from the kiln, producing about 125 barrels per hour, 55 per cent through a 100-mesh screen, and using about 145 horsepower. The latter mill particularly has been thoroughly tried out in every manner possible and has proven an absolute success, the output and fineness running uniform on every test.

The Bradley 66-inch 3-roll mill is especially of advantage to cement manufacturers because of its simplicity of construction. The wearing parts are few and are easily and cheaply replaced, and are accessible. All bearings are dust-proof. It is particularly useful where double stage reduction is required because of its enormous capacity and its ability to produce material of extreme fineness for tube mill efficiency with a low consumption of horse power and a low cost of maintenance.

The manufacture of cement is really a grinding proposition, and economy must be reached through the grinding department by using the most economical machinery obtainable. The low up-keep cost of one cent per ton of the Bradley 66-inch 3-roll mill has been attained in the case of both mills, and it is said to be possible to limit this sum to some extent. It is estimated that the up-keep cost will not run over this amount.

It is not intended that the Bradley 66-inch 3-roll mill should be classed as a finisher, as it is a primary grinder only, and is intended primarily for plants which are partial to double stage reduction. The Giant Griffin mill, manufactured by the Bradley Pulverizer Company, is designed for finishing and is generally used for that purpose. The company will be glad to furnish further particulars regarding the Bradley 66-inch 3-roll mill.

## U. S. GOOD ROADS CONVENTION.

### Delegates From Many States Assemble at St. Louis November 10-15.

A goodly number of delegates of the United States Good Roads Association met for the first time in St. Louis, Mo., on November 10-15. The convention was held at Suburban Garden, the first day's attendance being somewhat limited on account of the chilly weather. The second day, however, saw a substantial number of the 64,000 delegates on hand and the work of the organization was begun in earnest.

Twenty-eight governors of states had accepted invitations to be present and a majority of these were in attendance. Governor Major of Missouri gave the principal address on the opening day.

The Business Men's League of St. Louis assisted in the program and the detailed work in connection with the welcoming and entertainment of the delegates. President Shapleigh of that body was constantly busy with the arrangements.

President Kingsland of the Conventions Bureau was also busy corralling the delegates and assisting them in getting hotel reservations, etc.

The principal topic discussed at the U. S. Good Roads Association was the question of Federal aid in road building.

Tuesday was devoted to consideration of plans by which the promoters of better roads anticipate an appropriation of at least $25,000,000 from the government. The definite plan was submitted in a bill prepared by Senator H. Bankhead of Alabama, which he expects to introduce in the senate with the approval of the delegates to the convention.

This bill provides for an appropriation of $25,000,000 to be apportioned among the several states for good roads purposes in proportion as they appropriate money for the purpose. It is planned to require states to obtain as much money for work within their borders as the government appropriates to them.

The majority of the delegates favored government aid for good roads, and believed that the details of the system to be advocated formed the only question.

Although many bills of a similar nature have been introduced in congress, all have been defeated, congress having taken the position that each state should build its own roads.

Those who spoke of federal appropriations were Senator Bankhead; Prof. J. M. Lowe of Kansas City, president of the National Old Trails Association; John Craft, of Mobile, Ala., president of the Alabama Good Roads Association; Jesse Taylor, of Jamestown, O., editor of Better Roads; J. A. Rountree, of Birmingham, Ala., secretary of the United States Good Roads Association; State Highway Commissioner Frank W. Buffum, of Louisiana, Mo.; Richard Johnson, of Chillicothe, Mo., and John W. O'Neil, of Birmingham, Ala.

On Tuesday, November 11, Mayor Kiel of St. Louis delivered an address of welcome, which was responded to by D. W. Potter, of Arizona.

United States Senator Bankhead of Alabama is president of the United States Good Roads Association. He presided over the meetings, but was late for the opening session.

Maj. Robert P. Johnson, of New Hampshire, making his headquarters at the Planters hotel, represented Governor Bass of New Hampshire. Maj. Johnson brought with him a big roll of maps of New Hampshire roads. They are intended to show automobile tourists how they may travel safely and comfortably in the Granite state, and are offered as examples of what can be done in any state.

## OLDEST CONCRETE ROAD.

Bellefontaine, Ohio, claims to have the oldest concrete road ever built. The road was built twenty years ago and is still in a good state of preservation, being stilled used for heavy traffic every day. The pavement consists of a 4-inch concrete base and a 2-inch wearing surface; the base being 1:2:4 machine mixed gravel concrete and the top a 1:1 mixture of cement and bank sand. The concrete base was laid quite dry, was thoroughly tamped and the top was laid closely, behind the base. This pavement was laid really in blocks five feet square. To afford a foothold for horses the surface, after being smoothed with a trowel was roughened.

# CONCRETE

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## GRAND RAPIDS' NEW CONCRETE BRIDGE

### Imposing New Reinforced Concrete Structure Embodies Most Modern Ideas of Art and Endurance.

The completion of the new Leonard Street bridge in Grand Rapids, Mich., marks an epoch in the progress of that city; in fact, it is a real step forward in the line of public improvements. This beautiful new bridge, a picture of which is shown on this page, is an excellent example of the wisdom of doing anything right at the outset. Concrete was selected as the medium of construction of the bridge because the progressive people of that progressive city realized the wisdom of building for permanency and eliminating such a factor as the maintenance cost and thereby preclude the possibility of deterioration which is an influence so subtle in its action that almost before it is noted a structure is on the verge of collapse. All of this is entirely eliminated by the use of reinforced concrete which grows harder and more impervious to the effects of the elements as it grows older, so that it is safe to predict that a reinforced concrete bridge that has been properly designed and built with proper foundations will last practically forever.

In point of design the new bridge represents the very latest and best type of reinforced concrete bridge construction and embraces every improvement up to the present time. It was designed by Daniel B. Luten, who has a record of designing probably more reinforced concrete bridges than any other engineer in the United States, and has devoted his life to this particular department of engineering. The Leonard Street bridge is one of his best efforts and will also be a monument to his skill in this special branch of the engineering profession. All the materials used in the construction of the bridge excepting only the steel reinforcing were secured in the state of Michigan, the 32,000 sacks of cement being the Michigan brand manufactured at Chelsea, Mich., by the Michigan Portland Cement Company and furnished by the Grand Rapids Building Material Company. This brand of cement was used exclusively in the construction of the bridge. The bridge itself was built by the Hackedorn Contract Company of Indianapolis, Ind. It comprises seven semi-eliptical arches, the center arch having a clear span of 90 feet and the end arches having a span of 73 feet, the intermediate arches varying in span between these two diameters. The width of the bridge is 66 feet over all. The foundations are carried down into solid rock to a depth sufficient to permit of the scalping of the entire width of the river up to the same width as has been done along the west side of the stream.

The making of these excavations into the solid rock of the bed of the river was no small job and the contractors were greatly delayed and hampered in this part of the work by the continued high water during the first autumn of the work as well as during the following spring. Persistent efforts, however, were finally rewarded by getting the rock blasted out to the proper depths and concrete footings placed and properly anchored where nothing could possibly move them from their intended locations. Provision has been made under the sidewalks on either side of the bridge for conduits for carrying all the wires necessary for telephone and telegraph companies, as well as the wires for the fire alarm telegraph and also for all pipes for the public service corporations, no unsightly wires that would mar the beauty of the structure being visible. Connection is also made with the lamp standards on the bridge itself from these conduits. All surface water on the bridge is carried down through the arches in proper drains, eliminating all unsightly marking of the arches or spandrels caused by dripping water. The lighting system on the bridge is notable. It comprises sixteen posts each carrying five lights, making eighty lights in all; sixteen of each are 100-watt lamps and sixty-four are 60-watt lamps. These are all placed and distributed so that the maximum illumination is thrown directly on the sidewalk where needed. The lamp standards are of beautiful design made entirely of concrete even to the side arms and reinforced throughout with steel so that there will be no danger of breakage. The globe holders are of solid cast bronze that can never rust or deteriorate in any way. The finish of the rail posts and lamp standards above the coping line is stainless white cement and pure silica sand, the finest obtainable. The sand used on this bridge is the same as employed in the manufacture of glass and cost more delivered to Grand Rapids than ordinary cement, but it makes a hard white surface that is practically impervious to moisture and grows whiter and harder as it grows older and the bleaching out process continues. The roadway over the bridge has been paved with vitrified brick to conform to the street paving at either end of the bridge, and the street bridge at the east end has been considerably raised so as to give a gradual easy grade over the bridge. The sidewalks are of cement and are wide enough to give the proper effect as well as giving ample room for pedestrians. Work was begun on the bridge in the latter part of 1911, but on account of high water conditions it was not resumed until May, 1912, when it was pushed forward all along the line. During the months of July, August and September the shortage of cars also caused another delay, but the bridge was completed and opened for public traffic on December 24, 1912, the contract of the bridge company being at that time all completed so far as the roadway was concerned. The Hackedorn Contract Company, which had the general contract for the construction of the bridge, is well known throughout the Middle West, having designed and built many notable bridges of this class. Representatives of the city of Grand Rapids were on hand practically every minute during the progress of the work, which was done to the entire satisfaction of all concerned and met the unqualified approval of the inspector, being pronounced a very high class piece of work. Edward Hughes, the company's chief engineer, was on the job at all times during the progress of the work. Actual charge of the work on behalf of the city was in the hands of O. W. Zelt, assistant city engineer, and A. B. Baldwin was the city's inspector.

## CEMENT SHOW WILL BE SUPPLEMENTED BY MANY IMPORTANT CONVENTIONS.

Thus far assurances have been received that the following organizations will hold their next annual conventions in Chicago during the cement show: American Concrete Institute, Illinois Lumber & Builders' Supply Dealers' Association, Interstate Cement Tile Manufacturers' Association, Illinois Association of Municipal Contractors, National Association of Sand & Gravel Producers, in addition to a National Conference on Concrete Road Building. The annual conventions of these organizations in connection with the cement show guarantee the presence of large and important classes of buyers of material and equipment.

The Consolidated Contract Company, of Portland, Ore., has taken a contract at $77,839 to build a concrete wall along a south section of the Cascade Locks.

## PITTSBURGH CONCRETE NEWS.

### Activities Pending Make Outlook for 1914 Exceptionally Bright—Present Year's Work Being Rushed to Completion.

Pittsburgh, Pa., Nov. 18.—Just now new operations coming on the boards in the line of concrete and reinforced concrete construction are not very numerous. The prospects for this line of work, however, for 1914 are excellent. Engineers and architects both agree that there is more big building in sight for next year than there was one year ago. The big impetus which the building of the $3,000,000 court house, to be started next spring, will give to good building operations on the "hump," will in itself provide a considerable amount of this sort of work. There is also in sight the big Pennsylvania freight station on the North Side, the B. & O. freight station on the North Side, the B. & O. $2,000,000 passenger and freight terminal on Smithfield street, the approaches to the Point bridge and a large amount of railroad and trolley construction work, making it evident that concrete work will not be wanting in the contracts let after January 1st. This year has been a fairly good one for concerns in this line and they are closing up their season on pretty sure foundations and with much confidence in the outlook for next year.

The Cramford Construction Company has recently closed some very large orders for piling. This concern is furnishing all the concrete piling for the foundations of the North Side Pennsylvania Railroad freight station on Federal street. It will use 16-inch simplex concrete piles and the job calls for about 1,200 piles, amounting to 40,000 feet in all. The same company has the contract for the piles under the P. R. R. track elevation walls at Wilkinsburg, Pa., which it is furnishing to the Dravo Contracting Company. It is also furnishing all the piles for the new B. & O. bridge over the Monongahela river at Glenwood. These will be molded concrete piles 30 to 40 feet long.

Irvin & Witherow are just completing the $125,000 plant of the American Reduction Company at Forbes and Brady streets, Pittsburgh, which is one of the best reinforced concrete jobs done in the city this year. The company used deformed bars exclusively in this building. The same company has nearly finished the reinforced concrete plant of the Continental Rubber Company at Erie, Pa., which cost about $100,000, and also the reinforced concrete plant of the American Sterilizer Company at Erie, which cost about $50,000.

Swanson Brothers have the contract for the extension of the Pittsburgh, Harmony & Butler street railway line from Elwood City, Pa., to Beaver, Pa., about 8 miles. There will be many fills and small bridges on the line and considerable concrete work will be awarded in the near future.

Adam Laidlaw & Co., of Pittsburgh, have received the contract for the Pittsburgh & Lake Erie railroad bridge over the Beaver river at Elwood Junction, Pa., which will be one of the biggest concrete jobs let in that section for a long time.

The Penn Bridge Company, of Beaver Falls., Pa., has the contract for building the lock gates to be used in the locks improving the waterway and connecting Puget Sound with Lake Union and Lake Washington, near Seattle, Wash. The contract, which is one of the best that has come into the Pittsburgh district this year, amounted to $309,691.

A syndicate of Pittsburgh capitalists has taken over the property of the Iola Portland Cement Company, of St. Louis. It will organize the Portland Gas & Pipe Company to operate the cement and oil land properties of the old corporation which was capitalized at $3,500,000.

THE LEONARD ST. BRIDGE, GRAND RAPIDS, MICH.

### PREPARING TO MANUFACTURE BRICK AND TILE BY NEW PROCESS.

O'Neill, Neb., Nov. 18.—Much interest is taken here in the manufacture of brick and tile for drainage and irrigation purposes, and other building material described in letters patent, issued by the Commissioner of Patents at Washington to R. F. Osborn and John Roach, of Ainsworth, Neb., the 14th of last month.

This is due chiefly to the fact that T. V. Golden, owner of the Golden Hotel, and well known throughout Nebraska, and Judge Carlon of this city, have by contract with the parties acquired the exclusive right to manufacture the products under this patent in all the states in the Union, except North and South Dakota and Minnesota.

Messrs. Golden and Carlon are at present occupied in ordering the necessary machinery, securing the services of experts and other necessary help, and deciding upon the location for a demonstration plant for the manufacture of the products. It was announced that Prof. Clark E. Mickey of the department of applied mechanics and machine design, University of Nebraska, had made a test of material produced by this method for durability and subjected it to transverse and compression tests, with very satisfactory results.

### WHAT AILS CONCRETE?

Concrete, Col., Nov. 14.—The birth of two more girls in this town in the past month, with not a single boy born in the past four years, has added to the eugenic mystery which citizens are trying to solve. All of the men of Concrete are employed in the cement plants and people are endeavoring to show that the dust inhaled has something to do with the birth of girls.

Homer Ventre, of Opelousas, La., has been awarded the contract for the concrete bridge at that place, under the direction of City Engineer Naff.

Architects Hanker and Cairns, of Memphis, have drawn plans for the five story Vandervert Hotel, to be erected at Paragould, Ark., by the Paragould Hotel Co.

The New Orleans Brick & Stone Company, Gretna, La., incorporated with a capital stock of $160,000 and will establish brick plant.

### ROCK ISLAND BRIDGE.

**Concrete Piers Across the Mississippi River.**

Memphis, Tenn., June 14.—Work on the Rock Island bridge over the Mississippi river at Memphis will commence within two weeks. The Union Bridge and Construction Company has taken the contract for the piers, foundations and the approaches for the entire structure. The assembling of men and material will commence right away.

An unique feature in connection with the contract is that L. S. Stewart, president of the Union Bridge and Construction Company, was general superintendent of the construction of the old Frisco bridge. The company's consulting engineers, Ralph Modjeska and W. E. Anger, of Chicago, were the engineers in direct charge of the building of the old bridge and are therefore quite familiar with the river soundings and the nature of the channel. Mr. Stewart has arrived in Memphis from his general offices in Kansas City. He is accompanied by his chief engineer, H. K. Seltzer, who will establish headquarters in Memphis. An office has been opened on Delaware street near the river.

The contract of the Union Bridge and Construction Company covers only foundation work and piers, but this will amount to more than $1,250,000. Orders have been placed for timbers to be used in building barges and preliminary to laying foundations for the piers. These foundations and piers will be of concrete.

The work will be done through the use of caissons, in which the workmen can operate under water. Only about 75 or 100 men will be on the job at first but this will later be increased to 500.

The work on the South Memphis terminal yards, which are a part of the Arkansas and Memphis Railway Bridge and Terminal Co. was begun several weeks ago, and the grading is well under way. It is estimated that the bridge will take quite two years for the building and the total cost will be upwards of $7,000,000. The bridge will be used not only by the Rock Island lines but also by the Missouri Pacific-Iron Mountain System and the St. Louis, Southwestern and Cotton Belt Route.

### CEMENT POSTS VS. WOOD.

When competition traveling men meet there is usually something doing. A couple of them met in Oklahoma City last month. One of them was selling wooden fence posts and the other was selling cement posts for the same purpose. The wood post man started the ball by saying:

"You have certainly got a lot of nerve selling cement fence posts in this country. Your cement posts are so heavy and hard to handle that it makes a man disgusted with himself, and besides, if a wagon runs against them they break in two, while our posts are light and easy to handle."

"I guess you are all right," said the cement post salesman, "but there is one thing you have forgotten. If the same wagon that broke our post should hit one of those wooden posts of yours they wouldn't be broken in two, oh no, you would need to hunt over the whole township for the pieces."

"That is all talk," said the wood post salesman, "we treat some of our posts and they will last forever; besides, wooden posts, cut the right time of the year, as ours are, are really alive for a long time."

"Yes," said the cement post man, "all you say is true. I know all about those posts that are treated. They are all treated when it rains. They drink like little fishes, and then they steam and rot."

"You make me tired," said the other. "I suppose you don't believe there is a proper time in the year to cut posts to make them have living and staying properties."

"Oh, yes I do. I believe all of that. I have to. Why, I sold ten carloads of posts just on account of that very thing last month."

"How was that?"

"You see, old Dan Longworthy had bought a lot of your specially recommended posts the year before and they wouldn't more than get them in the ground before they began to sprout, and old Dan told me he had to hire three extra men to keep the brush cut on those posts. That's the reason he is buying cement posts now, but say, Bo, don't throw up your job. That was in Oklahoma and the soil here is something unusual. Perhaps, if you went to some other state you wouldn't have the same trouble."

But the wood post salesman had left the hotel.

### SAN FRANCISCO CONCRETE NEWS.

San Francisco, Nov. 18.—The Pacific Cement Gun Company, at 766 Folsom street, San Francisco, has been engaged on a number of jobs in this vicinity of late, and has leased the "cement guns" for other important work outside. This device is used to waterproof the foundations of the new San Francisco city hall, to apply the exterior cement coating to the municipal garbage-incinerator and Geary street car house, to line the Twin Peaks fire-protection reservoir, the Jones street reservoir, etc. One of the largest jobs is the application of facing on the great Lake Spaulding concrete dam of the Pacific Gas & Electric Company. This method was also used recently to line 10 miles of ditch for irrigation in the Hawaiian Islands; and with the growing need for concrete lining in California irrigation ditches it is believed that the "cement gun" will find a wide field of usefulness.

The Fibrestone & Roofing Company, engaged in making patent concrete composition for roofing, flooring, etc., in San Francisco, has moved its office from the Mutual Bank building to 971 Howard street.

The Southern Pacific Railroad has just resumed service on its coast line between here and Los Angeles, which was interrupted for several weeks by the burning out of a timber-lined tunnel at Cuesta, near Santa Barbara. It is stated that as a result of this experience all the Southern Pacific tunnels are to be lined with concrete.

The Spaulding Construction Company of Portland, Ore., has taken the contract for the construction of concrete naval hospital building at Pearl Harbor, Hawaii, amounting to about $130,000.

An elaborate irrigation system is being installed on the Lakeview Irrigated Farms, near Perris, Cal., ten miles of concrete pipe in 12 and 14-in. sizes being used.

Figures are being taken for concrete work and fireproofing in the new San Francisco city hall.

The Warner Cement Works of Reedley, Cal., has a force of 30 men and six teams on the 3,000-acre Tagus ranch, putting in a complete irrigation system of 17-inch concrete pipe.

### MILWAUKEE CONCRETE NEWS.

Milwaukee, Wis., Nov. 18.—Road improvements in Milwaukee county, costing $696,000, will be made in 1914 if the report of the highways committee of the county board is adopted, as it probably will be. Of this amount to be expended the county will be asked to appropriate $465,000, a bond issue being authorized to cover the amount, while the state of Wisconsin will provide $231,000 under the highway improvement law. It is expected that, as last year, a great deal of concrete will be laid.

The Milwaukee county highway engineer will prepare plans and specifications for improvements on the following roads: Whitefish Bay road, with a forty-foot roadway, three and one-half miles; Green Bay and Cedarburg roads, completing work to the county line, about seven miles; Port Washington road, two and one-half miles; North Fond du Lac road, three miles; Lisbon and Burleigh roads, three miles; Watertown plank road to county line, two and one-half miles; Hawley road, two and one-half miles; Kilbourn road, two miles; New road, extension of Eighth avenue, two miles; Howell road, one mile; Loomis road, two and one-half miles; Chicago road, two and one-half miles.

### PHILADELPHIA CONCRETE NEWS.

Philadelphia, Pa., Nov. 19.—The Eastern Engineering Company, 303 Hale building, is preparing plans and surveys for a concrete water reservoir to be constructed in Maryland for private interests.

Plans and specifications for a new car barn which is to be erected in the near future at Akron, Ohio, of reinforced concrete, are being prepared by C. A. Keen, Witherspoon building.

The Vulcanite Paving Company has been awarded the contract for all the concrete work to be done on the new Theodore Presser Home for Retired Musicians. Paul A. Davis, 3d, architect.

Work is about to be started on the new concrete factory building to be erected for the Progressive Knitting Company, at Royersford, Pa. Estimates have been received. E. B. Lewis, architect, Lansdowne.

Charles J. Brooke, 518 Federal street, Camden, N. J., is receiving bids for the construction of a concrete brick and factory building for Bristol Patent Leather Company, at Bristol, Pa.

The Allentown Construction Company, of Allentown, has started work on razing the old storage house at the water works preparatory to erecting a new sterilization plant. This firm has also been awarded the contract for the concrete work to be done on the works.

C. H. Prather, of Memphis, has been awarded the contract for constructing the concrete sidewalks at Dermott, Ark., costing $26,387.

The Harris Concrete Co., of Union City, Tenn., will erect a handsome concrete residence at Gleason, Tenn., for Dr. D. F. Terrell, a druggist of that place.

Pennville, Ind.—Fred Shumaker, of Portland, Ind., has bought a half interest in the Pennville Concrete Company, and will assume its management. H. D. Caylor has retired to enter medical college.

Work on the concrete construction of the new filter plant of the water works company at Logansport, Ind., will begin in thirty days, and proceed straight through the winter as much as weather will permit.

Chicago Concrete Pole Company, Chicago, Ill., has been incorporated; capital stock, $25,000; construction and manufacturing, specialty of concrete and cement products; John A. Sheehan, M. H. Forner and Thomas J. Nealis.

The Johns Tile Company, of San Jose, Cal., manufacturers of concrete irrigating tile, are starting a branch factory at Hollister, Cal. They have taken a number of contracts in that district, one being for 3,500 feet of 15-inch pipe.

The C. F. Massey Company, of Chicago, is planning to establish a branch factory in Spokane for the manufacture of reenforced concrete products. C. F. Massey, president, and Andrew Christ, Jr., secretary and assistant treasurer of the company, are in Spokane in connection with the plans and are negotiating for three acres for factory site. They announce the plant will employ from 25 to 125 men.

# SAND-LIME BRICK

**SAND-LIME BRICK ASSOCIATION.**
(Meets Annually.)

**Officers.**

President—S. O. Goho, Harrisburg, Pa.
Vice-President—F. B. Allen, Toronto, Ont.
Secretary—W. E. Plummer, Jr., Buffalo, N. Y.
Treasurer—J. L. Jackson, Saginaw, Mich.

**Executive Committee.**

Canadian Division—G. Silvester, Calgary, Alta.
Western Division—E. G. Chapman, Minneapolis, Minn.
Eastern Division—W. M. Burchfield, Rochester, N. Y.
Southern Division—H. H. Tift, Tifton, Ga.
Central Division—W. L. Penfield, Willoughby, Ohio.

## THE SAND-LIME BRICK ASSOCIATION WILL MEET IN ANNUAL CONVENTION.

The November Bulletin of the Sand-Lime Brick Manufacturers' Association issued from the office of the secretary, W. E. Plummer, Jr., 211 Fillmore St., Buffalo, contains information to the effect that the 1913 meeting of the association will be held at Harrisburg, Pa., December 9-10, 1913.

An elaborate and interesting program has been prepared for the two days' sessions of the convention, which opens at 10:00 o'clock on the morning of Tuesday, Dec. 9. The first day's session will be devoted to routine organization business which embodies the various officers' addresses and reports of the committees. In the afternoon a visit will be made to the plant of the Hummelstown Brownstone Company, at Waltonville, Pa., and the association work of the day will conclude with a "Smoker" at 6:30 in the evening.

At the opening session on Wednesday morning, H. S. Spackman, of Philadelphia, will read a paper on the subject, "Essentials for Success in the Manufacture of Sand-Lime Brick." This paper will be followed by an open discussion to be led by W. H. Crume, Dayton, Ohio.

G. Sylvester, of Calgary, Alta., Can., will present a paper entitled, "Sand-Lime Brick in Canada," and the discussion on this subject will be opened by W. D. MacFarlane, of Winnipeg, Manitoba, Can.

W. J. Carmichael, of Willoughby, Ohio, will read to the delegates a paper entitled, "Sand-Lime Brick in the Sub-tropics."

W. E. Emley, of the U. S. Bureau of Standards, Pittsburgh, Pa., will conclude the morning session with the reading of a paper entitled, "An Analytical Study of Brick Specifications." The discussion on this subject will be opened by Fred K. Irvine, editor of ROCK PRODUCTS, Chicago, Ill. The afternoon session will convene at 1:30 p. m. with a "round table" meeting which will be conducted by W. K. Squier, of Syracuse, N. Y. This will be followed by reports of the various committees and election of officers, after which the Tenth Annual Convention of the Sand-Lime Brick Association will adjourn.

Present indications are that this meeting of the association will be the most largely attended and the most important in the history of the organization. Every member of the association has given individual attention to the status of the association and the manner in which it has enhanced the sand-lime brick industry, this being the main reason for the present indications of a most successful convention.

## REPORT ON SAND-LIME BRICK PROGRESS.

The value of the output of sand-lime brick in the United States last year, according to figures compiled by the United States Geological Survey, was $1,170,884, compared with $897,664 in 1911, an increase of $273,220. The 1912 production was slightly greater than that of 1910, which was valued at $1,169,153, and only 4.48 per cent less than that of 1907, the banner year in the industry.

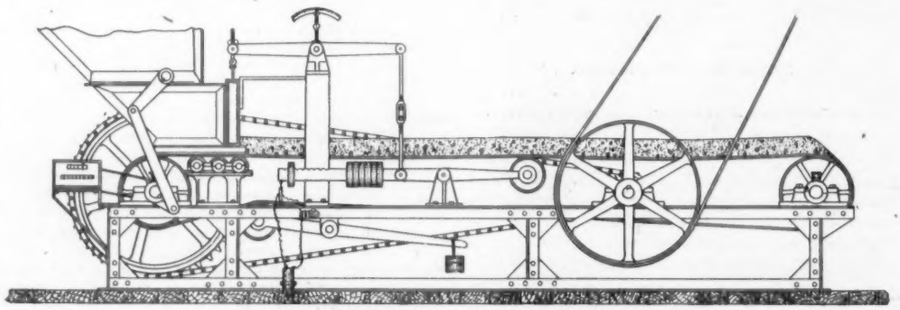
The total number of this comparatively new kind of brick manufactured in 1912 was 174,361,000, of which 164,140,000 were common brick and 10,221,000 front brick. Michigan continued in 1912 to be the leading state in value of output, its product constituting 25.54 per cent of the total value of all sand-lime products in 1912. New York was second in value of product, as in 1911, reporting 10.99 per cent of the total. Florida was third, displacing Minnesota, which fell to fourth place. Eight states—California, Florida, Idaho, Indiana, Michigan, Minnesota, New York and Wisconsin—showed an increase in 1912, and three—New Jersey, Pennsylvania and South Dakota—showed a decrease. Michigan showed the largest increase, $77,392; Florida the second and New York the third. In 1911 only two states—New York and Wisconsin—showed an increase.

The average price per thousand for common sand-lime brick was $6.45 in 1912, compared with $6.09 in 1911 and $6.36 in 1910; for front brick it was $10.41 in 1912, against $9.53 in 1911 and $10.90 in 1910.

The sand-lime brick industry has been established in the United States only a little over ten years and during that time has passed through many vicissitudes. Many plants have been erected where market conditions were not propitious and others where suitable materials were not available; others, although conditions and materials were satisfactory, failed for want of technical skill or because of poor management. During 1912 some of the abandoned plants were taken over by skilled men, were remodeled in accordance with the latest developments, and are now being operated successfully. The prospects for 1913 are considered bright, the future of the industry seems established, and a steady growth may be expected.

## THE SCHAFFER POIDOMETER.

The Schaffer Engineering & Equipment Company, of Tiffin, Ohio., is contributing to increased efficiency methods of making concrete, with a machine known as the Schaffer Poidometer. The success of this machine has already been proven in practice and is not a theoretical possibility. By the mechanical action of the Poidometer it is possible to join materials in their proper proportions for making concrete and by doing this the continuous mixer will operate successfully, and will eliminate quite a large percentage of labor used with inefficient methods of doing this line of work.



THE SCHAFFER POIDOMETER, STYLE A.

The machine, as shown in the accompanying illustration, weighs and regulates the flow of materials traveling in a continuous stream over a conveyor. In brief, the machine consists of an endless belt of variable length, depending on conditions. This belt travels over pulleys and idlers similar to that used in the regular conveyor, one of which connects to the regulating and recording mechanisms at the bottom of the containing bin, the size and form of which will vary with individual conditions. When it is desired to unite a number of different materials there is placed one machine for each of the materials, and each machine will deliver the desired proportions in a constant stream and insure an even mixture. It also works to much advantage where moisture is to be added to materials in certain quantities. When materials are put up in batches, a special attachment is provided which controls the machine for any desired amount and when desired quantity has been delivered the machine automatically stops and again sets itself in operation at the proper time.

The Poidometer is perfectly self-contained and can be set up immediately. It has a very wide range in capacity and can be readily adjusted, both for different quantities and also for a large variety of materials of different consistencies.

## THE COMING GOOD ROADS CONVENTION AT PHILADELPHIA.

Plans for the coming convention of the American Road Builders' Association at Philadelphia, Pa., December 9, 10, 11 and 12, which will be the tenth annual gathering of that organization, are being rapidly matured by the convention committee having the matter in charge.

Although the entire program of the technical sessions has not been definitely decided upon, a general scheme for covering the various subjects to be considered has been prepared and many assignments of papers have been made. The matters to be discussed at the convention will be taken up under three general heads—organization, construction and maintenance—and these will be further subdivided so as to cover every phase of road and street work. Great care has been taken in selecting men especially fitted to discuss the subjects upon which they will speak. Each speaker will be followed by several men who will open the discussion, and these have also been selected because of their qualifications and experience along the several lines upon which they will talk. Although not definitely decided, it is probable that the set papers and discussions will occupy at least five sessions.

A departure from the usual method of conducting the congress will be made this year by the holding of a popular session on Thursday evening. At this meeting addresses will be made by prominent public men who have evinced an interest in highway betterment, and it is planned to have other features which will appeal to laymen as well as to those actually engaged in road work. Governor Lister, of Washington, has signified his intention of being at the congress and will probably by one of those who will address the meeting on Thursday evening.

On Thursday afternoon the delegates will be taken on an inspection trip through the city. This will afford an excellent opportunity to view street improvements and other work of a like nature.

The local committee is making extensive plans for the entertainment of the delegates and the social features of the convention are being carefully arranged. One of these will be a theater party for the A. R. B. A. members, the exhibitors and official delegates on Wednesday evening. Special provisions are also being made for the entertainment of the ladies attending the congress. An automobile ride around the city has been planned for them on Wednesday afternoon, and other entertainments will be provided.

Applications for space are being received in large numbers and the indications are that it will be necessary to accommodate some of the larger and heavier exhibits outside of the building. The number of spaces already assigned not only assures the success of the exhibition but also indicates that it will be the greatest display of road building machinery and materials ever made at a road congress. The officers of the association will be quartered at the Bellevue-Stratford Hotel. The sessions of the convention and congress and the exhibition of machinery, materials and methods as well as place of registration of delegates will be at the First Regiment Armory.

The Stephens-Adamson Mfg. Co., of Aurora, Ill., has issued an imposing catalogue on the subject of "Power Transmission Machinery," which contains a complete list of gearing, etc. The catalogue is known as Section Two, "S-A," General Catalogue, No. 19. The booklet is well illustrated and is replete with diagrams, price lists, etc.

# Concrete Roads

## COOK COUNTY'S NEW CONCRETE ROAD READY FOR INSPECTION.

The first example of concrete road construction ever attempted in Cook County, Illinois, has been completed and comprises one mile of finished permanent highway at Niles Center. Township road commissioners of Cook County will make an inspection of this piece of highway construction on December 1st. From their visit to Niles Center the road building policy, as it pertains to the Cook County situation may result. The county commissioners following the decision of the Illinois highway commission have agreed that permanent roads must be either of concrete or brick construction. The present experiment in the concrete road is in all probability the result of the splendid publicity which has been derived from the success of the Wayne County, Mich., concrete roads and the manner in which Edward Hines, road commissioner of that county, has succeeded in creating a nation-wide interest in his method of construction.

The expense of this experimental piece of work was divided equally among the Business Men's Club of Evanston, the citizens of Niles Center and the Cook county commissioners, who allowed one-third from the county funds. The whole idea in the experimental work is to encourage permanent construction, also to test concrete, which has since been adopted by the state highway commission as one of the two types of permanent road construction.

Practically a mile of road was built for $12,000. The concrete part of the road on Church street between Niles Center and Evanston is 16 feet wide and is what the state highway commission calls "one course construction." That is, the same material is used throughout the entire layer or "course" of concrete. The concrete layer is 6 inches thick on the sides and 8 inches in the middle. Expansion joints are provided every 25 feet and are protected with steel plates which are filled with elastic substance like tar or asphaltic mastic which allows for the contraction and expansion due to temperature changes.

Many Chicago business men are enthusiastic about the stretch of concrete highway construction at Niles Center and it is expected that the other 7 miles of this same highway will be improved with concrete next spring.

## PLAN BIG GOOD ROADS DAY.

### Illinois County Board Members to Form Permanent Body.

Over the signatures of John J. Gard, E. M. Board, Avery Coonley, A. M. Anderson, and Harley B. Mitchell, country members of the Cook county (Illinois) commissioners, invitations were issued a few days ago for a "Great Big Top Notch Good Roads Day" on Monday, Dec. 1.

The Hotel Sherman, Chicago, Ill., has been selected for the convention. The morning session will start at 10 o'clock. An attempt will be made then to organize the township officials. After luncheon a special train will be provided to take visitors for an inspection of the concrete road now being constructed at Niles Center. After the inspection a dinner will be served at the Hotel Sherman.

Among the speakers engaged for the dinner are A. D. Gash and S. E. Bradt of the state's highway commission, A. N. Johnson, state highway engineer; Edward N. Hines, "father of concrete roads in Wayne county, Michigan"; William G. Edens, president of the Illinois Highway Improvement Association; Coroner Peter M. Hoffman, and an assistant from the government road office at Washington.

Chicago already has contributed nearly $500,000 toward the proposed Lincoln highway, which will reach from the Atlantic to the Pacific, according to H. J. Larsen, vice president of the highway association.

## CONCRETE ROADS IN ENGLAND.

(From our London Correspondent.)

London, July 25.—Experiments have recently been carried out in England with roads constructed of concrete and it has been found that, in addition to being free from mud in wet weather, they are practically dustless in summer. Instead of the large camber necessary with macadam and bituminous macadam, a small crown only is necessary, one-quarter inch to the foot being ample. The roads in question were made with washed and screened gravel and sand, the gravel ranging in size from one-quarter inch to one and one-half inch and the sand from one-eighth inch down to dust. The concrete was made in the proportion of three parts of stone to one of cement, sufficient sand being added to fill the voids. It was ascertained that with a moderate staff 550 feet of roadway 16 feet wide and 7 inches thick at the sides and nine inches thick at the center could be constructed in a day.

The subgrade is made flat and is rolled level, and in order to prevent it drawing moisture from the concrete it is thoroughly wetted before the mixture is applied, the same process being carried out with every kind of subsoil. No stone or other material is used as a lining, the concrete being placed direct on the road. A mixture comparatively rich in cement is used, and it is applied in a very wet state. After being laid it is watered with a sprinkler for eight days, after which it is covered with wet sand, or loam, to a depth of two inches to three inches, in order to prevent from drying too quickly. This covering is afterwards removed. It has been found that the wear on the road is almost imperceptible, and it has withstood the traffic to which it has been subjected, and which was by no means light, considerably better than roads constructed of other materials.

Roads of this type have been constructed at a cost of as low as four shillings and fourpence ($1.04) per square yard, this cost including engineering, drainage, culverts, grading and subgrading, while others have cost as much as seven shillings and sixpence ($1.80) a yard—prices which compare favorably with most other methods of road construction. The cost of maintenance for the 65 miles of roadway works out at sixty-two pounds ten shillings ($303.72) per annum, which is also a reasonable figure. It is said that concrete roads are not detrimental to horses' hoofs, and no extra re-shoeing is required. It is interesting to note that it was not considered necessary to use any steel reinforcement in this method of road construction, although with wider roads it would no doubt be advisable to do so. It has been estimated that reinforcement would add from fivepence (10 cents) to sixpence (12 cents) per square yard to the cost of the road. The surface is finished off as smoothly as possible, and it is found that roads constructed in this manner are not so slippery in wet weather as either wood block or asphalt pavements.

## "CONCRETE WHEREVER PRACTICABLE."

The organization committee of the Lincoln Highway Association, whose headquarters are in Detroit, Mich., have issued a folder outlining the aims and purposes of the organization. In its statement of objects is the following: "To immediately promote and procure the establishment of a continuous improved highway from the Atlantic to the Pacific, open to lawful traffic of all description without toll, and to be of concrete wherever practicable."

The last clause in the statement is a significant recognition of concrete for highway building. As the Lincoln Memorial Highway movement has its center in Detroit it is not surprising that the organization should have introduced such a clause in favor of concrete. Detroit has become famous the world over for the wonderful concrete country roads that have been built in Wayne county radiating from Detroit.

The association has committed itself to the permanent improvement of approximately 2,000 miles of the transcontinental road. As a permanent road concrete fulfills every requirement. The economy and durability of this type of road is rapidly becoming appreciated the country over.

## NATIONWIDE ROAD PROJECTS.

The Ocean-to-Ocean Highway Commission held its third annual meeting in Los Angeles, Cal., October 24th and 25th, in the directors' room of the Chamber of Commerce. The organization elected officers which are as follows: President, Col. D. K. B. Sellers, Mayor of Albuquerque, N. M.; first vice-president, Fred T. Colter, Springerville, Ariz.; second vice-president, J. Y. Aragon, Magdalena, N. M.; third vice-president, C. O. Barker, Banning, Cal.; secretary, John Becker, Jr., Belden, N. M.; treasurer, Frank McKee, Albuquerque, N. M. The states of Arizona, New Mexico and California, which are represented in this association, elected legislative committees. It was decided to hold the next convention at Yuma, Ariz., and that of the year following in Springerville, Ariz.

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The Southern Appalachian Good Roads Association held its fifth annual convention at Asheville, S. C., October 22-23. A number of prominent speakers were on hand, notably Governor Locke Craig of North Carolina, and W. W. Finley, president of the Southern Railway Company. Delegates from the states of North Carolina, South Carolina, Virginia, Georgia, West Virginia, Tennessee, Alabama and Kentucky read reports on the progress of work which has been done in those states. During the second session of the convention C. B. Scott, assistant engineer, Virginia Highways Commission, spoke, adopting for his title prospects for road work in his state. C. D. Williams, chief road engineer of West Virginia, spoke in behalf of federal aid in highway improvement. J. A. Smith, chairman of the highway commission of Hall county, Georgia, was also a speaker. Dr. Joseph Hyde Pratt, state geologist of South Carolina, was re-elected president and treasurer and H. B. Varner, Lexington, S. C., was re-elected secretary. It was decided that the next convention shall be held at Bristol, Tenn., some time during the year 1914.

* * *

Suggestions embodied in a report of the Board of Consulting Engineers of New York made recently will undoubtedly be of interest to road builders and those connected in any way with the building or maintenance of roads. The plan was outlined whereby a commissioner is to head a department system of chief engineer, secretary and auditor, the state to be divided into nine divisions of which each is managed by a division engineer. These nine divisions are grouped in two districts, each in charge of a deputy engineer acting under the order of the chief engineer. The deputy engineers, chief engineer, secretary, auditor and commissioner are to have headquarters in the capitol city, and the division engineers to be stationed within their own territory and each would have charge of all the construction and maintenance of state, county and town highways within his division. He would have the assistance of probably seven assistant engineers in direct charge of this work and would also have three maintenance gangs which he would assign to the different sections as they were needed. The chief engineer would have as assistants three road engineers and a secretary. Each deputy engineer would have as an assistant a resident engineer, as would also each division engineer.

* * *

The Ontario Public Roads & Highway Commission held its first meeting at Ottawa on October 28th. C. A. Magrath was chairman of the commission and outlined a comprehensive plan for promoting highway improvement.

* * *

The county council of Essex county, Ontario, Canada, a distinctly rural community, has decided to submit a by-law on January 1 for $1,000,000, to be applied to the construction of concrete roads. Windsor, the county seat of Essex, has a few concrete streets, but the famous roads of Wayne county, Michigan, are right across the river, and the farmers of Essex are thoroughly familiar with them. They have not only seen teams drawing tremendous loads with ease, but realize that these roads make excellent sidewalks as well as general traffic highways, a phase of the subject that appeals tremendously, as it means absence of mud and dust throughout the year. For these reasons Essex county farmers will make an appropriation proportionate to some of the very largest state appropriations now under consideration in this country.

## NOT DISCOURAGED ON ROAD PROSPECTS.

State Treasurer and former Auditor General Robert K. Young expressed optimistic views as to Pennsylvania's highway resources, notwithstanding the defeat of the constitutional amendment to permit the state to issue $50,000,000 worth of bonds for the construction of highways, in a recent statement in which he said that the commonwealth could obtain good roads by making judicious appropriations from its revenues. He asserts that $5,000,000 is available for use annually in road construction if the legislature sees fit to appropriate it. In speaking of the possibilities Mr. Young said:

"I am not at all discouraged about the prospects for good roads in the state as the result of the defeat of the proposed bond issue. I am as enthusiastic for good roads as ever, but I was not in favor of the bond issue. I do not expect ever to be in favor of a bond issue for road improvement, as I see no necessity for such a course.

"Having had the distinction of being a member of the legislature in 1897, and I think that it was in that session that the so-called Hamilton road bill was introduced, the subject of good roads has been a most interesting one, as well as a necessary

consideration. I supported that measure and have been a road improvement enthusiast ever since. The bill proposed an appropriation of $1,000,000, to cover a period of two years, for road improvement, and was considered at the time as an epoch-maker. Public sentiment has certainly developed by leaps and bounds on this subject since that time, and this fact should be an encouragement to road improvement enthusiasts.

"I am informed that physical conditions in our state are adverse to the easy construction of highways. This is due not only to the climatic conditions but to the rugged and varying topography of the state, the varying character of the soils and the scarcity of naturally good road building materials."

## WATERPROOFING*

By S. T. Wagner.

The increasing number of solid-floor bridges, especially in cities, involving waterproofing and the expenditure of large sums of money, and the necessity of thoroughly protecting steel reinforcement in concrete under certain conditions, as well as the waterproofing of masonry in general, make the study of the various external methods of waterproofing of the greatest importance. The methods referred to consist in the application to the surface to be waterproofed of either a membrane of felt or fabric of some kind thoroughly cemented together with some bituminous material, or a layer of inorganic material impregnated with the same substance.

There can be no question that the bituminous material so used is the real waterproofing medium, and that all other materials incorporated therein are simply fillers to retain the bituminous material in place and give it additional reinforcement of some kind.

Whether the waterproofing is applied for the protection of the public from drippings from an overhead railroad bridge, or is used to prevent the corrosion of reinforcing material in concrete construction exposed to water, the object in either case is to obtain a layer of durable waterproofing material which is suitable to each particular case.

Waterproofing is expensive, it is always very difficult and costly to repair if defective, and it behooves the engineer to use the best materials that he can secure and to apply them with the greatest care to the structure, which should be especially designed to meet the necessary details required in good waterproofing practice. There is much uncertainty at the present time as to a number of points in connection with this character of work, but there appears to be almost complete agreement that the perfect or imperfect application of the materials determines a good or a bad piece of work.

It would appear that, outside of particular instances where waterproofing is used to keep water in, the majority of cases are those in which the object is to keep the water out; and of these a very considerable portion of the structures requiring its use are essentially different as indicated above—first, solid-floor bridges; second, underground masonry.

In the first case the conditions are such as to require special elasticity at all temperatures in order that the waterproofing may adjust itself to the vibrations of the structure, especially in the case of railroad bridges of relatively short span. It is usual to have a regularly ballasted floor, which if properly drained makes a condition for which we can say in general that the oxidizing action of the air is probably a more potent factor in the disintegration of the waterproofing material than the action of whatever water may be present.

In the second case we may safely say that when the masonry is covered with even a small amount of earth, the action of the air is negligible and that of the dampness, or water, is the more serious. In some instances water may be in constant contact with the waterproofing.

The materials to be used should therefore have chemical and physical characteristics which make them suitable for the above-mentioned conditions.

There are in use at the present time two general classes of materials which are used for waterproofing purposes when the conditions are as just described: First, compounds of an asphaltic nature; second, coal-tar pitch. Both of these materials have been and are at present used quite extensively and with varying success. The successes or failures in many cases have been due to proper or improper application as much as to the inherent qualities of the materials themselves; and it is believed that the successful use of either class has often been attributed to this fact rather than to the real qualities of the materials, and that at the present time the amount of reliable data as to what is needed in the way of a specification for the proper material to be used is woefully lacking.

*Paper read at convention of American Society for Testing Materials, Atlantic City, N. J., June 24-28.

To one who is not a modern chemist and thoroughly versed in the mystic symbols of the hydrocarbons, the chemistry of these materials is almost hopeless in its practical application; but it is quite evident that there is an essential difference between them chemically, that is, between such figures as are usually given in chemical analyses.

The physical properties are apparently much more interesting and useful to the practical engineer, and it would seem that we could do away with the chemical data unless they indicate properties which when translated will enable us to distinguish undesirable, or it may be dangerous, elements. We can understand and appreciate such figures as melting point, brittle point, elasticity at various temperatures, and consistency, and data concerning these properties give us a very fair idea of the various physical properties.

The data which seem to be needed are those from laboratory tests which will enable us to determine the relative durability of these products, first, when exposed to the air; second, when exposed to water; and third, when alternately wet and dry. Any such test is, or would be, essentially an accelerated test. It is possible that at the present time the question of durability might have to be answered by practical experience with the different materials in existing structures. However, it does seem that some information as to what we should aim for and what should be avoided is due from the manufacturer or the chemist. Nothing inspires the confidence of the user of a structural material so much as the free discussion of the methods of manufacture on the part of the manufacturers. Experience in the past with other materials has shown that this confidence is not abused in the preparation of specifications. Such information is badly needed in connection with waterproofing materials.

From recent investigations and research there seems to be a general impression that when exposed to the air, asphalt products are more durable than coal-tar products, and that the opposite is true when exposed to water. The opinion that asphalt products are more suitable for use on solid-floor bridges seems to be of general though not universal prevalence, on account of the greater elasticity of this material at low temperatures. In other words, an asphalt product with a melting point of 150° F. which will be ductile at a temperature of 40° F. or lower can be obtained, while a coal-tar pitch with the same properties can not. It has been the experience of the writer that asphalt mastics made with natural rock asphalts, when fluxed with asphalt compounds of high ductility at low temperatures, produce mastics which are much less liable to crack in service than are those in which the flux used is brittle when cold.

Water to a certain extent is a solvent of all asphalts, but from the tests of Whipple and Jackson it is quite evident that the question of solubility is a comparative one, and the tests there given show that there are classes of asphalts upon which the action of water is very slight. In this paper a quotation is made from Richardson which shows that the action of water upon coal tar is about two-thirds of that upon Bermudez asphalt cement when expressed as the gain in weight in water in a given time. Bermudez asphalt in the tests made by Whipple and Jackson is among those which were most affected by water. A number of cases of the durability of coal-tar pitch in actual service in underground work seem to indicate very positively its suitability for this class of work. Will some one say whether or not properly selected asphalts are unsuitable under similar conditions?

Apparently the questions which need to be answered are the following:

1. What kind of materials are most suitable for general application to (*a*) solid-floor bridges; (*b*) underground masonry?

2. What kind of materials are most durable for (*a*) solid-floor bridges; (*b*) underground masonry?

3. If asphalt products are used, what should be specified?

4. If coal-tar products are used, what should be specified?

Probably the answers to these questions belong to the work now under consideration by Committee D-8 on Waterproofing Materials, but a general discussion of the subject may be of material assistance to the committee in its work.

## SAND-LIME BRICK ASSOCIATION BULLETIN.

The November Bulletin of the Sand-Lime Brick Manufacturers' Association issued from the office of the secretary, W. E. Plummer, Jr., 211 Fillmore Avenue, Buffalo, N. Y., contains information to the effect that the 1913 meeting of the Association will be held at Harrisburg, Pa., December 9 and 10, 1913. There are also published in this bulletin photographic reproductions of buildings recently erected in which sand-lime brick are used as the principal material in the construction.

## FACE BRICK DEALERS' ASSOCIATION WILL CONVENE.

The annual meeting of the Face Brick Dealers' Association of America will be held in conjunction with the annual meeting of the Face Brick Manufacturers' Association at French Lick Springs, Ind., December 10, 11 and 12. The holding of these two conventions simultaneously is for the purpose of broadening the scope of the work of each of the separate organizations. The Face Brick Dealers' Association was urged by the officers and prominent men of the Manufacturers' Association to provide for more close and friendly relationship between the producing and distributing department of the industry. As a basis for this it is noted that the purpose of the Dealers' Association is embodied in Paragraph 2, Article 2, of its constitution, which reads as follows: "To promote cordial and friendly relations among members and between members and manufacturers, thereby removing so far as possible misunderstanding and ill feeling due to the spreading of false reports and baseless charges and ignorance of conditions prevailing in the industry."

Thus will the holding of the two conventions at the same time and at the same place be productive of good results. Secretary-Treasurer R. L. Queisser, Cleveland, Ohio, advises ROCK PRODUCTS that all face brick dealers throughout the country are urged to be present at the meeting, whether members or not, in order that they may become more familiar with the association's aims and objects.

That the manufacture of brick is soon to become one of the most important industries of New Mexico has been convincingly suggested by samples of the product of the New Mexico Fire Brick Company of Gallup, N. M., which were recently placed on display in the office of W. J. Johnson, general sales manager for the company, at 204 West Gold avenue, Albuquerque. The samples include both facing and building bricks, and they have been pronounced by experts unsurpassed either in quality or in coloring. Moreover, the New Mexico company, because of natural advantages at the Gallup plant and also because of reduced haulage charges, is in a position to make delivered prices on brick which can not be approached by manufacturers outside the state.

## OWNERSHIP OF ROCK PRODUCTS.

The new postal regulations which went into effect on October 1, 1912, require the statement of ownership and management of all publications, and we hereby conform to this requirement by publishing the questions asked and the answers given:

STATEMENT OF THE OWNERSHIP, MANAGEMENT, ETC.

of ROCK PRODUCTS, published monthly at Chicago, Illinois, required by the Act of August 24, 1912.

**Note.**—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the postoffice.

Name and Postoffice Address of

Editor—Edgar H. Defebaugh, 537 S. Dearborn St., Chicago, Ill.

Managing Editor—Fred K. Irvine, 537 S. Dearborn St., Chicago, Ill.

Publisher—Edgar H. Defebaugh, 537 S. Dearborn St., Chicago, Ill.

Owner—Edgar H. Defebaugh, 537 S. Dearborn St., Chicago, Ill.

Known bondholders, mortgagees and other security holders, holding 1 per cent or more of total amount of bonds, mortgages or other securities—None.

E. H. DEFEBAUGH,
Editor, Publisher and Owner.

Sworn to and subscribed before me this 24th day of September, 1913.

(Seal.) JAMES S. PENNINGTON.

(My commission expires October 24, 1916.)

The General Cements Products Company, of Anderson, Ind., has changed its name to the Concrete-Fuel Company.

The Wilson Rock Crusher & Building Material Company has been organized near Mortimer, N. C. The promoters of the company are J. W. Pope, F. H. McLaughlin and C. E. Crosby, all of Newton, N. C.

The plant of the Columbia Tile Company, of Grafton, W. Va., was destroyed by fire September 12.

# THE BOURSE

Advertisements will be inserted in this section at the following rates:

**For one insertion.....25 cents a line**
**For two insertions.....45 cents a line**
**For three insertions.....60 cents a line**

**Eight words of ordinary length make one line. Heading counts as two lines.**
**No display except the headings can be admitted.**

Remittances should accompany the order. No extra charges for copy of paper containing the advertisement.

## EMPLOYEES WANTED

WANTED—Experienced superintendent with references by gypsum company located in Oakfield district. State salary. Address Box 959, care ROCK PRODUCTS.

WANTED—Reliable foreman for mixing department. EMPIRE GYPSUM CO., Rochester, N. Y.

WANTED—Man experienced in builders' supply business, who has wide experience in all branches of the business, including sales, credits, teaming, etc., etc. None but men who have made good and can make good need apply. This position has large possibilities for right party. Location in thriving city of northern Ohio. Box 962, care ROCK PRODUCTS.

## EMPLOYMENT WANTED

**WANTED.**

A strictly sober and competent man wants position as superintendent or foreman of gypsum mine. Thoroughly experienced; any location. Address No. 6, care ROCK PRODUCTS.

WANTED—Position by experienced salesman, familiar with all building materials. Architectural education, good habits, willing to work. Like to make contract for 1914. Address Box 957, care ROCK PRODUCTS.

WANTED—Position as superintendent or builder of large lime plant. High references—long experience. Address "Expert," care ROCK PRODUCTS.

WANTED—Position by A1 specialist in the manufacture of plaster. Particularly well equipped in the modernized method of detailed cost statistics and the working out of plans to increase the output. Address Box 960, care ROCK PRODUCTS.

## BUSINESS OPPORTUNITIES

FOR SALE—Large sand and gravel deposit; also excellent opportunity to establish ice plant. Only available deposit in large territory. Shipping facilities unsurpassed. Five railroads. C. G. ROOT, R. F. D. No. 2, Box 15, Watertown, S. D.

WANTED—Acres on railway near Kankakee, Streator or Joliet for stone quarry. Address Box 963, care ROCK PRODUCTS.

FOR SALE—40 acres of the well known Grimms limestone cliff at Grimms, Wis. Address J. H. FARRELL, Wausau, Wis.

FOR SALE—A one million ton deposit of high grade gypsum. Particulars on request. E. H. M., Box 266, Salt Lake City, Utah.

**SAND.**

The largest, purest silica sand deposit in the world; coarse, sharp, white; analyzing 99.90% silica, balance moisture; on railroad, near water transportation. If interested in buying same, write R. L. MARTIN, Ocala, Fla.

**CLAYWORKERS CASTINGS GREY IRON.**

Foundry Castings—Prompt delivery. WM. E. DEE CO., Foundries & Machine Shops, Chicago and Harvey, Ill. All kinds of clay-workers castings, dies, dryer cars, grate bars, etc. Main office, 30 N. LaSalle St., Chicago, Ill.

WANTED—Information regarding good cement plant for sale. Send description. NORTHWESTERN BUSINESS AGENCY, Minneapolis, Minn.

FOR RENT—A piece of valuable property on which are three excellent lime kilns, and in addition to this, is a quarry containing large deposits of stone suitable for concreting, etc. This property is located on three railroads. Shipments can be made via Lehigh Valley, Jersey Central or Philadelphia & Reading. Plenty of land available for storage purposes. Unsurpassed opportunity for parties wishing to engage in the building supply business. Address L. F. GRAMMES & SONS, Allentown, Pa.

TO LEASE—Fine crystal sand and gravel pit with new machinery, consisting of three drum hoisting engine, stone crusher, wash plant and cable bucket. Good market in two cities, railroad connection. For particulars address J. B. SPERRY & SON, Battle Creek, Michigan, Rooms 5 and 6 Marjorie Block.

**AN UNUSUAL OPPORTUNITY.**

**Wanted**

**A Man to Operate Lime Plant**

**or**

**Entire Plant for Sale.**

A lime plant, consisting of three patent iron kilns, 210 acres of stone and timber land, 10 houses, one mile of railroad track, unlimited supply high grade limestone, situated in northwest portion of Arkansas, in Independence County, on Missouri Pacific Railroad, six miles from Batesville, in the mineral belt. Capacity of each kiln 150 barrels per day. Would like to have experienced man, with $2,000 to $3,000 operating capital, to manufacture and load lime on cars at plant, at a fixed price. He would use the operating capital to obtain supplies and operate commissary for his own account. Would sell plant reasonable and on satisfactory terms. Address CAPTAIN H. C. DANIELS, Little Rock, Ark. Write today for particulars.

## MOTOR TRUCKS FOR SALE

**MOTOR TRUCKS.**

New 1½ ton Harvey trucks made in Chicago and made right; designed by the best engineers; guaranteed by a responsible firm. WM. E. DEE CO., 435 So. LaSalle St., Chicago. Works: Harvey, Ill.

## CARS & LOCOMOTIVES FOR SALE

**CARS.**

156—5 yard 36-inch gauge all steel Peteler 2-way dump cars, built 1910 and '11. Thoroughly overhauled. Practically good as new. The best dump cars we have ever seen. We are putting these cars on the market at bargain prices. Write us for further information.

Eight 36-inch gauge double-truck flat cars.

**LOCOMOTIVES.**

Eleven—12x16 Porter four-wheel saddle-tank 36-inch gauge locomotives, built 1910 and '11, and used until the end of the season 1911; practically new.

One—11x16 Pittsburg four-wheel saddle tank, 36-inch gauge.

Thirty-five 9x14 Porter four-wheel saddle tanks, 36-inch gauge. Most of these have steel cabs and were built since 1902.

**STEAM SHOVELS.**

Three—Marion Model 60 steam shovels, in excellent condition; ready for immediate shipment.

One—Bucyrus Model 65, with Model 70 front and applied. Thoroughly overhauled.

Two—Marion Model G shovels, in first-class condition. Also big lot steam shovel repair parts, and other contractors' equipment.

MINNESOTA EQUIPMENT CO., Hibbing, Minn.

## MACHINERY WANTED

Wanted—To buy two hardening cylinders, for Sand Lime Brick, 45 feet long by 57 inches diameter or one of same diameter 90 feet long. Give full particulars. Address Box 964, care ROCK PRODUCTS.

**HYDRATOR WANTED.**

Will buy second-hand Clyde hydrator; must be in first-class condition. Will be purchased immediately if satisfactory. Write full particulars to Box 956, care ROCK PRODUCTS.

WANTED—No. 8 crusher, elevator and screen. Prefer Gates, but any make acceptable. Address Box 954, care ROCK PRODUCTS.

## PLANTS FOR SALE

FOR SALE—Complete stone crushing plant on Southern railroad. Entire output sold months ahead. No incumbrances. For particulars address Box 958, care ROCK PRODUCTS.

**FOR SALE.**

Lime plant, annual capacity 125,000 barrels. Established trade. Entire output analysis 99% pure—20% investment. E. W. RAUSCHER, Erin, Tenn.

**FOR SALE.**

Entire property of the Havana Cement Tile and Product Company, located at Havana, Ill. Manufactures tile and all kinds of cement products. Located on two railroads and Illinois River. Cheap material for manufacturing. A rare bargain for the right party. Address M. D. SCHAFF, 500 Pierik Building, Springfield, Ill.

**AGENTS, ATTENTION.**

Excellent lime plant for sale at a sacrifice. 22 acres Indiana limestone; 4 kilns; store house, etc. Would consider proposition of trade for Chicago property. Address Box 961, care ROCK PRODUCTS.

**FOR SALE! SILICA MILL IN CENTRAL OHIO.**

Capacity 150 tons daily—Washed sand for glass, furnace bottoms, mine motors, brick setting, etc.

Also Pulverizing Department for making silica wash.

Mill is running at a profit, a rare bargain. Good reasons for selling. Terms to suit. Address G. L. GRAMMER, Masonic Temple, Zanesville, Ohio.

## MACHINERY FOR SALE

FOR SALE—Two number 8 Krupp ball mills in first-class condition. These with other material to be disposed of on account of change of equipment. Write SECURITY CEMENT & LIME CO., Hagerstown, Md.

FOR SALE—One C. O. Bartlett & Snow Co., Direct Heat Rotary Dryer, 36"x24'. Style M. Will sell for $400.00 f. o. b. our works, blue print furnished. WINCHESTER GRANITE BRICK CO., Winchester, Ky.

**FOR SALE.**

One Little Giant Vulcan Steam Shovel, ¾ yard dipper; new boiler—shovel in good condition. Will sell at a bargain or trade for concrete mixers and hoisting engines. CHICAGO BUILDERS SPECIALTIES CO., 460 Old Colony Bldg., Chicago, Ill.

**FOR SALE.**

1 30 in. Sturtevant Vertical Rock Emery Mill.
1 Rotary Crusher.
Elevators, screw conveyors, line shafting containing pulleys; one $60.00 Friction Clutch included.
$400.00 for entire outfit if taken at once.
Address Box 949 care ROCK PRODUCTS.

**FOR SALE! IMMEDIATE DELIVERY.**

1 Hanson Corliss Engine, 20 x 48 inch stroke, 375 h. p.
2 Tubular Boilers, full front, 6 ft. x 18 ft., with equipment for setting in battery.
1 Harper Heater.
1 Corliss Heater.
1 McGowan Heater.
1 Duplex Pump.
2 Single Blake Pumps.
Castings and Pulleys.
THE WILLIAMS CONTRACTORS' SUPPLY CO., Columbus, Ohio.

## FOR SALE

| | |
|---|---|
| Thew No. 0 Traction Steam Shovel | $2,550 |
| Thew No. 1 Revolving Shovel, ¾-yard | 3,300 |
| Little Giant, 1-yard Traction Shovel | 2,000 |
| No. 2 Cyclone, Mounted Steam Drill | 250 |
| Vulcan No. 4 Steam Pile Hammer | 275 |
| Vulcan No. 2 Steam Pile Hammer | 375 |
| Hayward 1-yard Standard Orange Peel | 400 |
| Hayward 1½-yard Standard Orange Peel | 450 |
| Kelly 10-ton Tandem Steam Roller | 1,200 |
| Oastler 10-ton, 3-wheel Steam Roller | 900 |
| Kelly 12-ton, 3-wheel Steam Roller | 900 |
| Lambert 7x10 D. C. D. D. Hoist and Boiler | 600 |
| Monighan 7x10 D. C. D. D. Hoist and Boiler | 600 |
| Lidgerwood 8½x12 D. C. D. D. Hoist and Boiler | 800 |
| Vulcan 7x12 Dinkie 24" gauge | 825 |
| 20 Western 1½-yard, 24" gauge Cars @ | 30 |
| 1 car load each 35 and 40 lb. rail @ | 23 |
| 1 car load 16 lb. rail @ | 24 |

Also Stone Crushers, Air Compressors, Derricks, Pumps, Relay Rail, Rock Drills, etc.

**All Goods Inspected and Guaranteed**

**WILLIS SHAW**

**1216 Peoples Gas Bldg., CHICAGO**

## ! Special Bulletin of Stone Crusher Bargains !

STONE MEN:—If you are going to add any crushers to your plant this coming winter, look over the following:

1 No. 21 style "K" Gates, manganese fitted, only two years old.
1 Mammoth 36-inch McCully, chilled iron fitted, 3 years.
1 No. 12 style "K" Gates, used three years on limestone. Chilled iron fitted.
2 No. 9 McCully's, manganese fitted, 4 years old.
1 No. 8 Gates, "D," chilled iron fitted, 10 years.
1 No. 7½ McCully, manganese fitted, 3 years old.
6 No. 6 McCully's, Manganese fitted, 3 years old.
2 No. 5 "D" Gates, chilled iron fitted.
2 No. 4 "D" Gates, chilled iron fitted.
2 No. 3 McCully crushers, manganese fitted.
1 No. 2 Gates, manganese fitted.

All these are ready for immediate use without repairs, and prices are right. We have elevators, screens, hoists, cars, etc., to go with them. Be sure to WRITE US.

**MARSH CO., Old Colony Building, CHICAGO, ILL.**

## WHO WANTS IT?

Austin No. 5 and No. 3 Crushing Outfit, elevators, screens, automatic engine; Used 6 months on light work. Good as new.

**Low Price**

## WHO WANTS IT?

20 1½ yard End Dump All Steel Cars, 36-inch gauge. Overhauled and A1.

**Price Each $52.50**

***Dealers in Second-hand QUARRY Equipment***

**WILLIS SHAW MACHINERY CO.**

**NEW YORK LIFE BUILDING :: :: CHICAGO, ILL.**

The American Keene Cement Company, Sigurd, Utah, with branch offices in Salt Lake City, Philadelphia, Chicago and San Francisco, lately issued an interesting little booklet of a general descriptive nature and showing reproductions of art marble from American Keene Cement. Pictures of Red Numidian, Italian Pavonazza, Connemara or Royal Green, Juane Fleuri, Verd-Antique are shown in their natural colors and express the delightful results which can be obtained by the use of American Keene cement in this branch of the building material line. Art marbles in their reproduced state are finding an ever increasing use, especially in buildings and structural work of the more important type. The little booklet also explains the process of manufacturing American Keene cement and gives specifications for its use. The uses to which it can be applied are without number. A wall built with American Keene cement is absolutely impervious to disease germs and perfect sanitation is secured. Decorations of the most harmonious and delicate shades may be obtained from this cement and will indefinitely retain their luster and beauty. A beautiful marble-like surface is obtained and for casting purposes all sharp lines and exact details may be secured. American Keene cement makes a perfect bond in concrete and is especially adaptable for use on reinforced concrete walls, ceilings, etc. It sets and hardens slowly, which gives wood lath plenty of time for adjustment before the mortar sets, thereby obviating all danger of lath buckling and insuring a perfact wall.

The J. B. Fogelsong Manufacturing Company of Battle Creek, Mich., has filed articles of incorporation. The company will manufacture building material. The capital stock is $10,000, there being 1,000 shares at $10 each. There is $6,500 paid in, $2,000 being in cash. The stockholders are J. B. Fogelsong, Carrie J. Fogelsong, Jay H. Murray and Orville J. Murray.

W. C. McDonald & Bro., 3001 Morgan street, Tampa, Fla., contemplates establishment of plant to manufacture sand and cement bricks for building brick veneer houses.

The Fischer Lime and Cement Co., at Memphis, are enjoying satisfactory business at their several yards and main office. They supply several local and out of town contracts.

The Jordan Art Stone and Tile Company, Danvers, Mass., has been incorporated by John T. Carroll, Joseph Marston and Andrew H. Paton; capital, $50,000; to manufacture artificial stone.

Curran & Co., Chicago, Ill., has been incorporated; capital stock, $10,000; manufacturing cement, brick, building materials, etc. James Curran, Thomas Curran, George A. Curran.

Peuckert & Wunder, Philadelphia, have plans under way for a large four-story reinforced concrete warehouse to be erected this fall at Shell and Cherry streets for W. M. Sladin. Among the local specialists in concrete construction who will be asked to estimate on the structure will be the Turner Concrete Steel Co., P. Haiback Construction Co. and Roydhouse, Arey & Co.


# GLENCOE LIME—HYDRATED AND LUMP

goes into every building of importance in the Mississippi Valley. It is the famous black lime peculiar to this section. Brick or stone laid in mortar made from it stands for years like Portland Cement. No wasting away of joints, and falling out of brick. In scratch and brown coat plastering it greatly surpasses any other lime or hard wall plaster. Every good feature of the Lump Lime is imparted to the

## HYDRATE

making it perfect for plastering, laying brick, tile, etc. It is furnished Plain, or Haired for use on lath.

"The purest of Hydrated and Lump Lime for Water Treating and Chemical Purposes."
'LIMESTONE FOR FLUX."

**GLENCOE LIME AND CEMENT COMPANY**
915 OLIVE STREET ST. LOUIS, MO.

WANTED: Live Dealers for a Live Line. It will only cost you a letter and a little time to write for full information regarding our attractive proposition to live dealers. We will reply in detail and convince you that we have the best line of Waterproofings, Dampproofings, and Technical Paints in the World.

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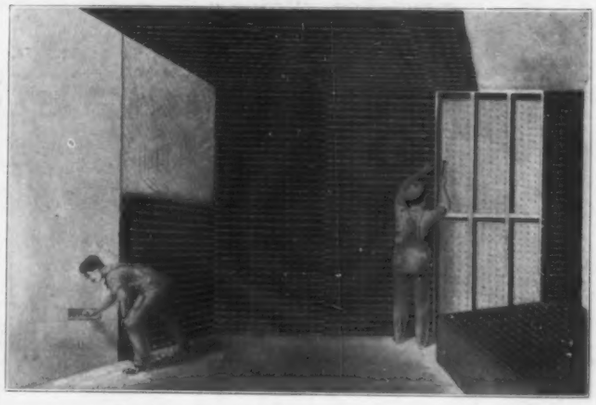

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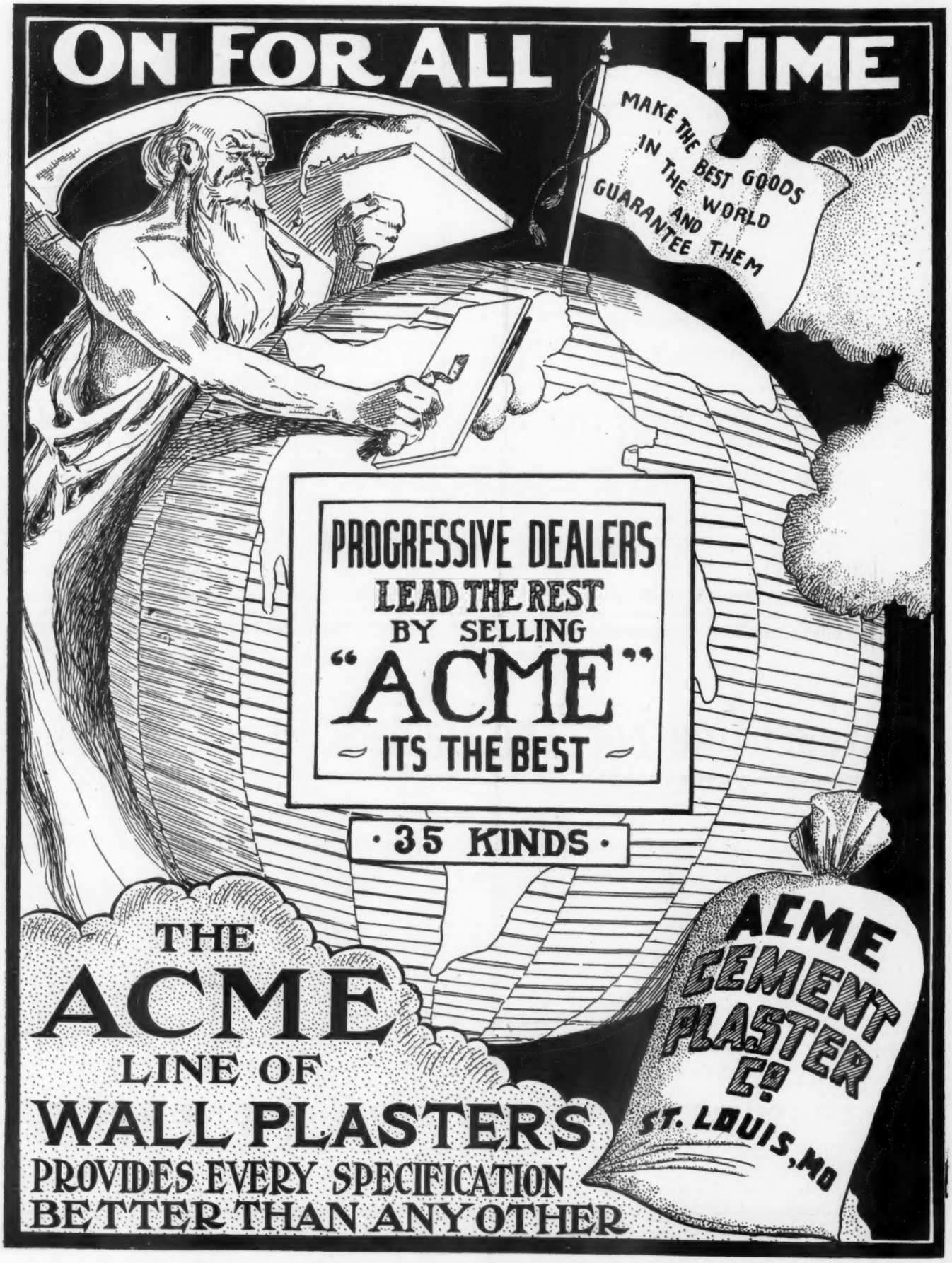
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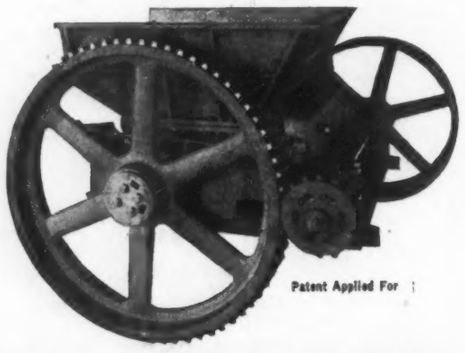


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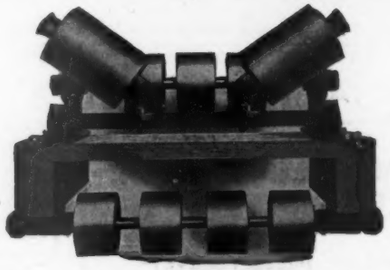

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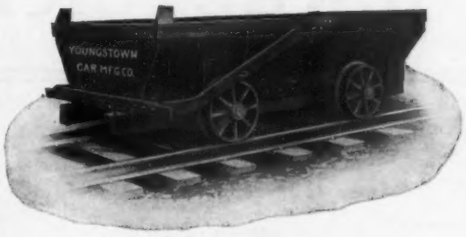


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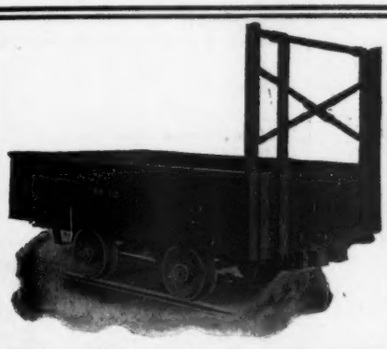

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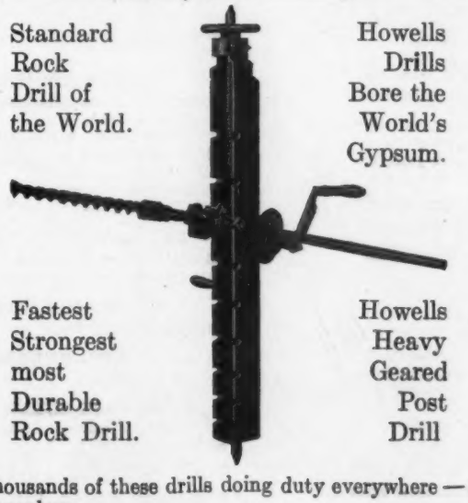

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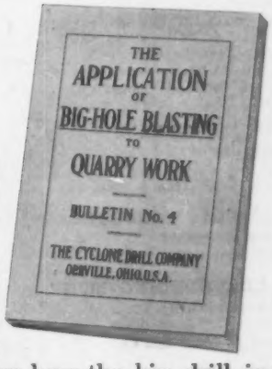


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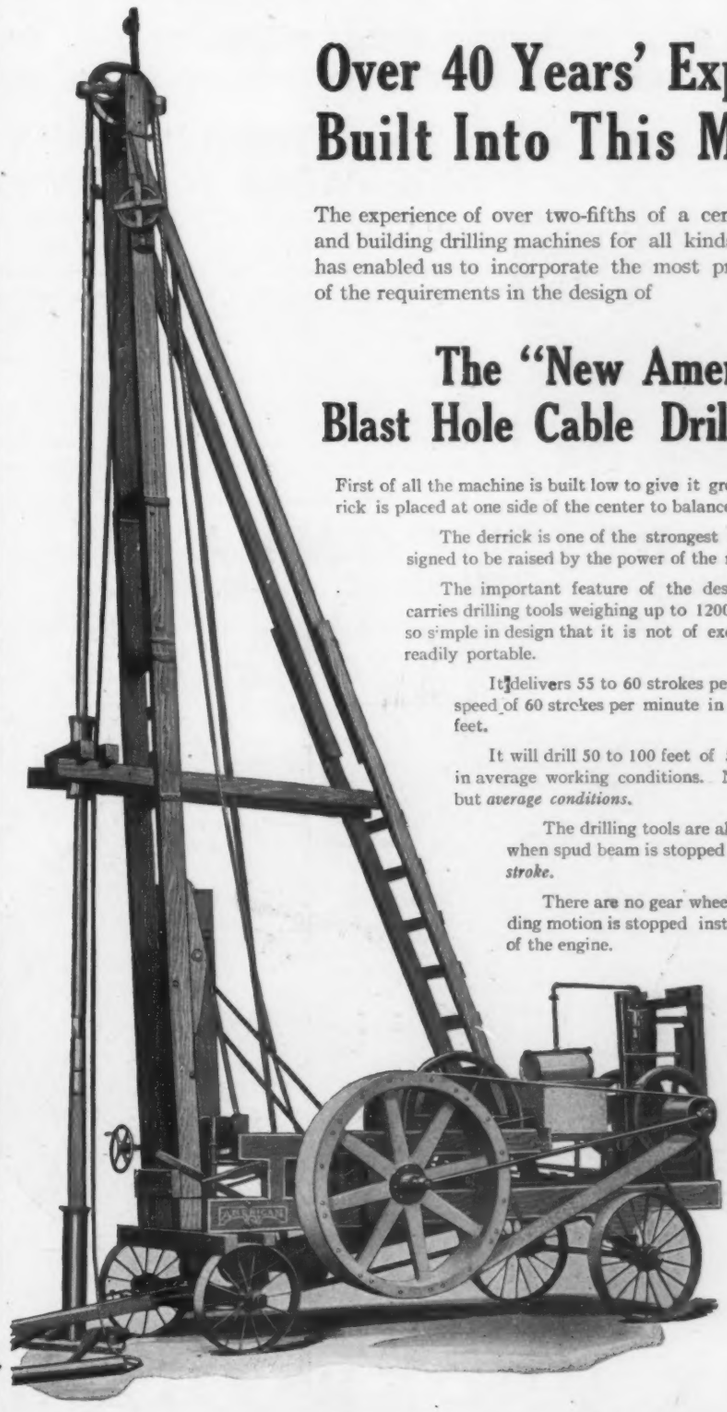

# Over 40 Years' Experience Built Into This Machine

The experience of over two-fifths of a century in designing and building drilling machines for all kinds of deep drilling has enabled us to incorporate the most practical knowledge of the requirements in the design of

## The "New American" Blast Hole Cable Drilling Machine

First of all the machine is built low to give it greatest stability, and the derrick is placed at one side of the center to balance the band wheel on the other.

The derrick is one of the strongest ever constructed and is designed to be raised by the power of the machine.

The important feature of the design of this machine is that it carries drilling tools weighing up to 1200 pounds, and the machine is so simple in design that it is not of excessive weight and therefore readily portable.

It delivers 55 to 60 strokes per minute and will maintain a speed of 60 strokes per minute in a dry hole to a depth of 40 feet.

It will drill 50 to 100 feet of 5½ inch hole in a 10-hour day in average working conditions. Not a *record* day, mind you, but *average conditions.*

The drilling tools are always *hung up* off the bottom when spud beam is stopped and always start on the *down stroke.*

There are no gear wheels or clutches and the spudding motion is stopped instantly regardless of the speed of the engine.

Fitted with gasoline, steam, or electric power.

Bulletin 129 tells about this improved machine. Shall we mail you a copy?

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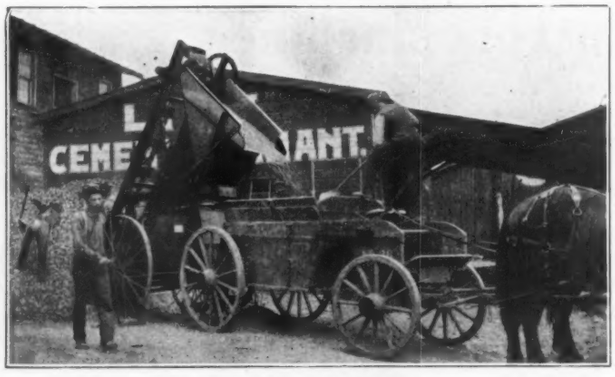
***The economical way to handle sand, stone, gravel, coal, earth, or any material that may be shoveled is with***



Loading Stone at Rapid Rate

## THE LINK-BELT PORTABLE WAGON LOADER

The mechanical loading device which practically is "Ten Shovelers in One." It consists of a steel frame-work, mounted on wheels, which supports a strong bucket elevator, in such a manner that the foot of the elevator can be pushed right into the base of a pile of material, and the head arranged with suitable discharge spout to deliver material directly into wagons or trucks; or into a screen for separation of sizes before delivery into the wagon, if desired. The elevator is driven by a 5 H. P. motor, electric or gasoline as required, mounted on the same general frame-work; and the size of buckets and continuous operation furnish a capacity of 60 tons of coal or 40 yards of broken stone per hour, thus enabling a crew of two or three men to do work which would require at least ten men with shovels. A clear saving of five to ten cents per ton can easily be made in handling materials in any large quantities.

**Further information in Bulletins Nos. 170 and 188, sent on request**

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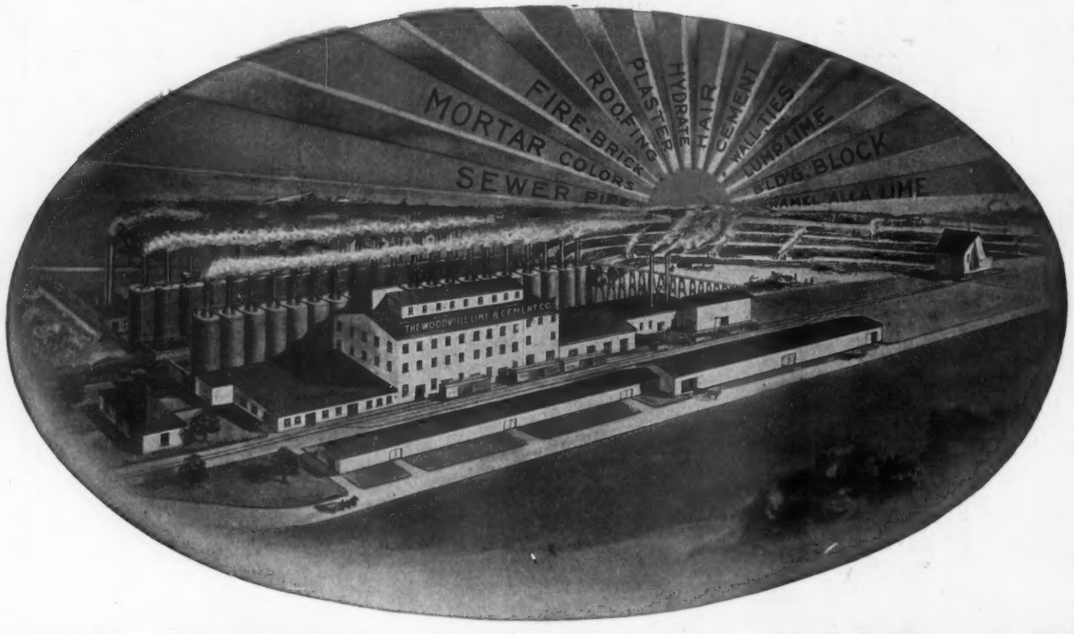


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Manufacturers of

***White Enamel Finish Hydrated Lime***

***White Lily Finish Hydrated Lime***

EVERYTHING IN BUILDING MATERIALS

**The Woodville Lime & Cement Co., Toledo, O.**

# A side by side test

Some five or six weeks ago a 3-ton Packard truck belonging to Werner Bros., of Chicago, rolled into our service station in that city and was equipped with Goodrich Wireless Demountable Dual Tires on one rear wheel.

The same day they had the other rear wheel "shod" with tires of another make, but of the same size and style.

The driver of this truck drove around to our Chicago store a few days ago to show us that his

**GOODRICH**
**WIRELESS**
**TRUCK TIRES**

were as good as new, while that very day he had been laid up while the tires on the other side, after only 1400 miles of service, were being replaced by new ones.

This is but an every-day occurrence, and owners are coming to see the advantage in *continuous service* over *frequent replacements*—no matter how favorable the adjustments with their expensive lay-ups.

***Ask for our handbook, "Motor Trucks of America." You'll find it interesting.***

## The B. F. Goodrich Co.

*Makers of Goodrich Tires and Everything That's Best in Rubber*

Factories: Akron, Ohio

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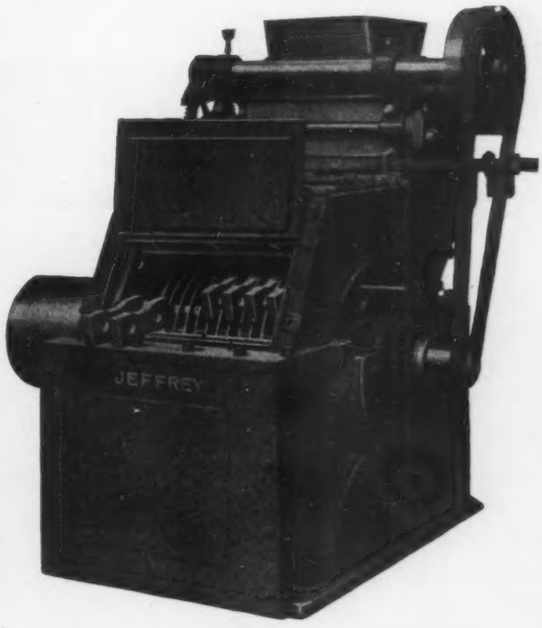
***There is nothing in Goodrich Advertising that isn't in Goodrich Goods***






## The Latest Word In Swing Hammer Pulverizers

is the

# Jeffrey Type "D"

Reduces all kinds of rock or any friable material to a very fine mesh, with less horsepower per ton handled than any other type of Hammer Mill.

Very compact, yet all parts are readily accessible. Renewable chilled liners prevent wear on frame. Automatic Feeder gives a constant load and prevents spillage. Ball bearings insure freedom from bearing troubles. Driven from line shaft or electric motor.

**Made in several sizes to suit requirements.**

**Send Sample for Free Test.**
**Ask for Further Information.**

## JEFFREY MFG. CO.

**Columbus, Ohio**

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is a common practice with big contractors today. The prosecution of work on concrete structures through the winter months involves no difficult engineering problems nor excessive costs, but does increase the volume and profits of the years business by lengthening the construction season to twelve months, and holding the contractor's organization intact.

We will send free to you, upon request, our book "Concreting in Cold Weather" which illustrates and describes the best winter practice.

***This Book is Full of Practical Suggestions—Send for a Copy***

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*Plants at Chicago and Pittsburgh*

**Annual Output 12,000,000 Barrels**

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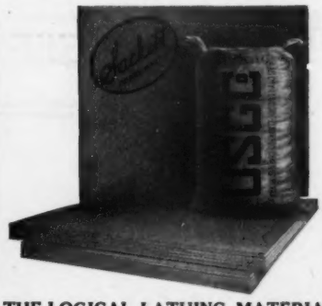


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Recognized highest standard of efficiency in Fire-Proofing

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**KING'S WINDSOR CEMENT**
**FOR PLASTERING WALLS AND CEILINGS**

Buffalo Branch, CHAS. C. CALKINS, Manager
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Not the hardest, but the toughest and best Wall Plaster made—Can be applied with less labor. Has greater covering capacity than any other similar material

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# NIAGARA

Wall Plasters Have Greater Covering Capacity, Work Smoother Under the Trowel and Have Greater Final Strength

**Niagara Neat Cement**
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**BUFFALO, NEW YORK**

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Carefully selected as to size.

Best shapes.

Will not break or flake in Tube Mill.

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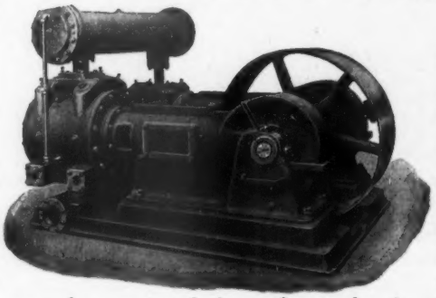
# This Clayton Air Compressor

## Has Protected Working Parts



The enclosed frame Clayton Air Compressor has a decided advantage under any conditions and is particularly desirable for service where moving parts must be protected from dirt and grit, such as in stone works and foundries.

The enclosed frame makes possible the "Splash Oiling" system of lubrication which requires no attention; the connecting rod dips into the reservoir in the base of the frame and its motion floods all running parts with oil.

The cover plate secures all of these advantages; at the same time, it can be readily removed, affording quick access to all bearings, crank pin, wrist pin and cross-head guides.

*Bulletin C 206-58 describes this type in detail. Send for a copy.*

CLAYTON AIR COMPRESSOR WORKS
WORKS: EAST CAMBRIDGE MASS. New York Office: 115 Broadway

Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, El Paso, Houston, Kansas City, Los Angeles, Louisville, New Orleans, Philadelphia, Pittsburgh, St. Louis, Salt Lake City, San Francisco, Seattle

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C 174.2



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STEAM SHOVELS DIPPER DREDGES BALLAST UNLOADERS

## M-O "120" 6-yd. Shovel

Equipped with 4-yd dipper, in stock for immediate shipment. Shipping weight, 120 tons.

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## YOU CAN'T FADE 'EM

There's one "best" in every line, but that is not always best for everyone concerned. In the building trades

## Ricketson's Mineral COLORS

are acknowledged to be the best choice for *Everybody*. Best for the architect because purest. Best for the contractor because they go farther. Best for the owner because they never change their color.

**For Mortar, Brick, Cement, Stone, Etc.**
**Red, Brown, Buff, Purple and Black**

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## Red, Brown, Buff and Black

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The Strongest and Most Economical in the Market.

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Our Metallic Paints and Mortar Colors are unsurpassed in strength, fineness, and body, durability, covering power and permanency of color. Write for samples and quotations.

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**Chattanooga, Tennessee**

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WHEN a Leviathan-Anaconda salesman comes up to you and says he wants to sell you a belt on a "make-good" basis, listen to him. He can tell you something worth while about the belt you ought to have.

Write our nearest house for convincing facts.

LEVIATHAN & ANACONDA FOR ALL KINDS OF BELT WORK BELTING

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## "National Brand" Plaster Board

**The Modern Lath**

Combines Great Strength and Lightness. Cuts and Nails Easily. Makes Perfect Bond with Plaster. Fireproofs, Sound-Deadens and Insulates. Can Be Used as "Wall Board."

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CUMMER DRYERS DRY EVERYTHING

## The F. D. Cummer & Son Co.

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## Proof to Dealers that there is a Waterproofing that is Reliable and Permanent, one that is Making Good and has Made Good in Thousands of Various Applications in All Parts of the World.

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## Waterproofing Compound

Dealers are just as mightily interested in securing a reliable and permanent waterproofing as are their customers.

The sale of Ceresit is growing by leaps and bounds. We are telling our story to Engineers, Architects, Contractors and others through the leading advertising mediums.

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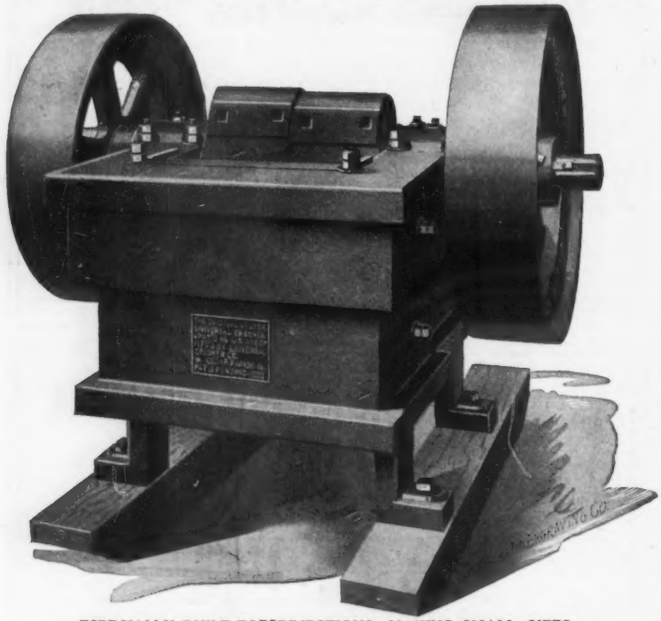
*Factories:* Chicago, U. S. A.; Unna, Germany; Warsaw, Russia; Paris, France; Vienna, Austria; London, England

## UNIVERSAL DUPLEX 2, PATTERN 1914



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Write for Price Folder Address

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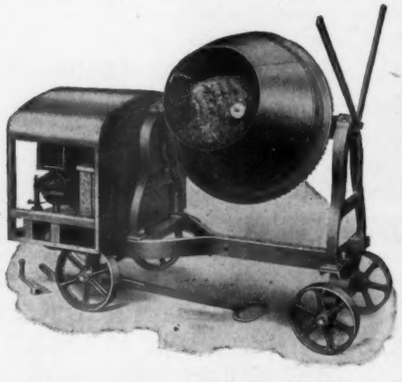
(Our Cement Show Exhibit at Booth 144-45 Dept. K.

## Stop!—Look!!—Listen!!!

# The Big-An-Litle-Mixer

## A MIX A MINUTE



If so, think of every possible advantage you could ask for or desire in a Small Batch Mixer. Check them over against the "BIGANLITLE" and you will find them all present. Try it.

First crack out of the box, you want.

A Mixer that really mixes—A Mixer where you see what's going on—A Mixer that mixes all kinds of material—A Mixer that runs easy and takes little power—A Mixer that is easily loaded and unloaded—A Mixer that is easily cleaned—A Mixer that is strong and durable—A Mixer that will save you money—A Mixer that you buy at the right price.

If you are a contractor on big and little jobs, write us for more information about this "BIGANLITLE" Mixer, which will be a surprise for you on big and little jobs, as this mixer is both big and little—big in results and little in size.

We have recently purchased the Basis U. S. Letters Patent No. 782,700 February 14, 1905. Buy a "Big-an-Litle" mixer and play safe.

**Smaller than other Big Mixers Larger than other Small Mixers**

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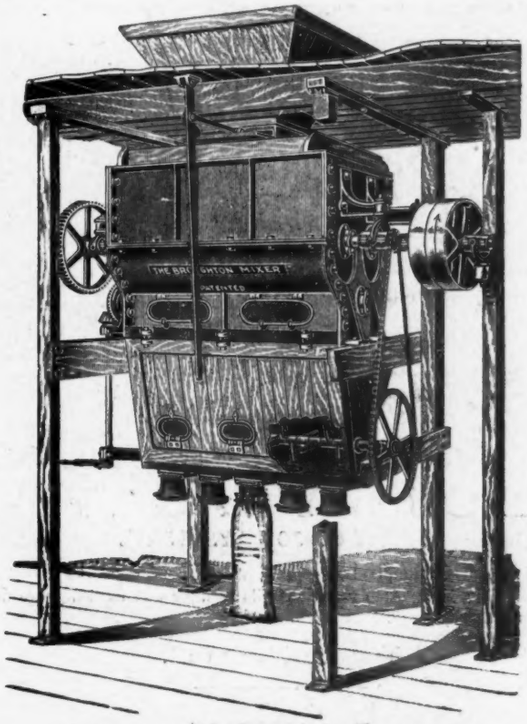
Tell 'em you saw it in ROCK PRODUCTS



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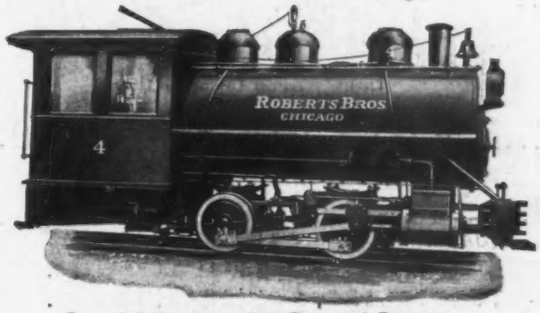


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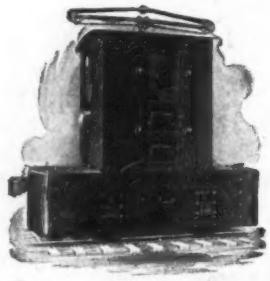

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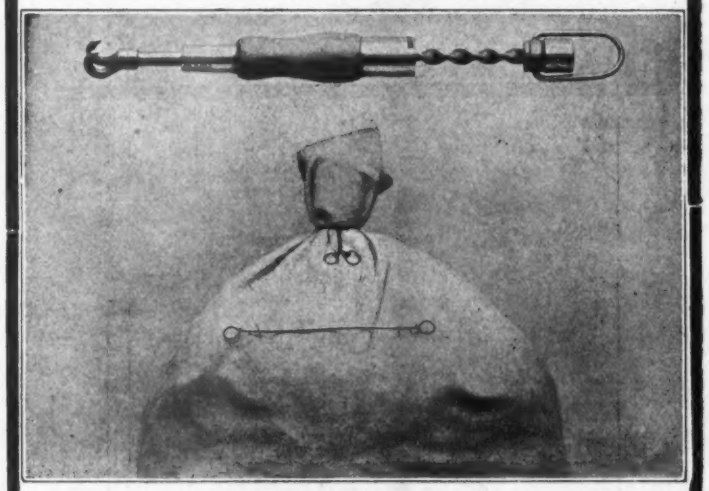

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